Rhetorical contestation involving disputed organizational and ontological categories

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Rhetorical contestation involving disputed organizational and ontological categories

by

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A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

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Chapter 1. Introduction

Categories are basic to comprehension, analysis, and communication of knowledge in organizations (Dutton & Jackson, 1987; Jette, 1989; Orlikowski, 1992; Ashcraft & Allen, 2003; De Grammont & Cuaron, 2006; Shedler et al., 2009; McCool & St. Amant, 2009). They define an organization by coding and sanctioning knowledge and providing a means for its evaluation (Foucault, 1970; Goodwin, 1994; Berkenkotter & Ravotas, 2002; Miller, 2002). This dissertation takes up two types of categories: 1) established organizational categories that involve conflicting interpretations on the part of organizational members, and 2) ontological categories or categories of “being or existence” (“ontological,” n.d.), such as science and non-science. My dissertation comprises three articles exploring disputed organizational and ontological categories and their consequences for rhetorical issues of agency, power, ideology, knowledge, and the like. Before I elaborate further, let me broadly explain the two types of categories I explore in this dissertation.

In the first article, I take up organizational categories of DHS and FEMA. Asa Makitalo (2004), a professor of education, has described organizational categories as those that help run institutions, “materialis[ing] in institutional documents, appear[ing] as codes on forms and . . . used in producing statistics” (p. 5). The disputed organizational or institutional (Makitalo’s, 2004, term) categories of DHS and FEMA that I explore include categories or entities of DHS and FEMA themselves, an organizational mission category called “all-hazards approach or capability,” an operational category called the “Incident of National Significance,” to name a few. As I will discuss, these categories were used by members of DHS and FEMA both in day-to-day work and to meet special challenges facing their
organizations. In the second and the third articles, I explore ontological categories of science and non-science. The term “ontology” is philosophical in origin and has been used by philosophers for hundreds of years to describe nature of things or “what is” (Smith, 2003, p. 1). The first known use of the word in English is recorded in a 1721 dictionary called the Bailey’s dictionary (Smith, 2003). In recent years, the term “ontology” has also been used by information science scholars to denote agreed-upon definitions of a myriad of terms and concepts across platforms, venues, and people (Smith, 2003). I use the term “ontological categories” based on communication scholars Bowker & Star’s (1999) similar use of the term in their important book on categories, *Sorting Things Out: Classification and Its Consequences*. Bowker and Star (1999) use the term “enduring ontologies” or “higher order issues” to describe categorization involving questions such as when does life begin, what is science, and so on (pp. 21-24). I do not use the term ontological classification in terms of some philosophical “essence” of a thing. Rather, I use the term to suggest the inherent naming that we do when we discuss our perceived essence or holistic understanding of fundamental questions or concepts such as science or non-science, marriage or a civil union, and the like. Ontological categories of science and non-science are regularly used in numerous settings (Gieryn, 1983). The National Science Foundation uses these categories, comprising academic disciplines, for the purposes of research funding (www.nsf.gov). For these reasons, my use of this term in my dissertation seems justified.

The first article explores DHS and FEMA’s “institutional categories” (Makitalo, 2004, p. 3) involving conflicting interpretations of established categories on the part of actors in the two organizations (henceforth “categories involving conflict”). The second and third
articles explore ontological categories of science and non-science in boundary-work disputes between evolution and its opponents. These two articles draw from a 2005 debate at Iowa State University between proponents of teaching only evolution and proponents of teaching Intelligent Design (ID) as well and considerable previous boundary-work literature. The second article offers a historical analysis of changing rhetorical bases for categorization between science and non-science in these disputes. The third article explores a relatively understudied basis for boundary-work—academic freedom.

My larger argument in this dissertation is this: Disputed organizational and ontological categories deserve greater attention in rhetoric and professional communication because these categories can help us understand complex organizational work involving issues of agency, power, and knowledge. I support this larger argument with the following claims I elaborate.

In ways that previous rhetorical studies have not taken into account, organizational categories involving conflict can show us how power in organizations can substantially shift from dominant to dominated agents. My analysis of DHS and FEMA’s categories involving conflict showed that DHS’s legitimated categories (Giddens, 1984)—or categories controlled by dominant organizational agents—came to be delegitimated or disempowered. This outcome was in part a result of a kairotic agency (Herndl & Licona, 2007) exercised by a dominated agent, who exploited the categories’ unintended consequences (Giddens, 1984). Additionally, this outcome was due to deliberations over the unintended consequences of the categories on the part of multiple agents. My other two articles explore ontological categories of science and nonscience in disputes between evolution and its opponents. In the first, I have
pointed out that the main rhetorical *topos* for boundary-work (Gieryn, 1983; Taylor, 1996)—the use of rhetoric to distinguish between science and nonscience—has changed between disputes of scientific creationism and disputes of Intelligent Design. The change illustrates how science is a public, institutional, and a political category, as has been pointed out by Kinsella (2005), Shapin (1992), and Rouse (1996), among others. In the second article, I explore an understudied basis for boundary-work—academic freedom—in an understudied setting—higher education. My analysis shows that proponents and opponents of evolution differ in their boundary-work involving academic freedom in scientific ecosystems (Taylor, 1996)—groupings of stakeholders in boundary-work disputes—of public schools and higher education. These differences are important because boundary-work disputes are fundamentally about what scientific education should be. In what follows, I provide a brief, general background of categories, review previous work on categories guiding my dissertation, and give an account of the main claims and methods of my dissertation articles.

**Background**

Before delving into the specifics of my dissertation, it is important to briefly survey approaches to the study of categories by scholars of rhetoric and other disciplines to provide a broader context for my dissertation. Rhetoric scholars’ engagement with categories can be traced to ancient Greece. In *Categories*, Aristotle listed 10 broad categories encompassing all subjects: substance, quantity, quality, relation, place, date, posture, state, action, and passion (Thomasson, 2009). These categories allowed a rhetor to furnish queries to gain knowledge about various entities and subjects (Thomasson, 2009). The Greek word *Kategoria* meant “what could be said against someone in a court of law” (Thomasson, 2009). The aforesaid
categories perhaps helped one in classifying a defendant. Aristotle believed categories to reside in nature, which needed to be discovered by an “intelligent observer” (Travers, 1980, p. 7). Moreover, he believed members of a category to possess “necessary” and “sufficient” conditions for category membership, something that meant distinct categories with well-recognized boundaries (Stibel, 2006, p. 344; Jacob, 2004).

However, empirical research by cognitive psychology scholars in late twentieth century (Rosch & Mervis, 1975; Rosch, 1978) has changed the Aristotelian notion of categories (Jacob, 2004). These scholars have pointed out that most categories “do not have clear-cut boundaries” (Rosch, 1978, p. 196). They have defined categories as human groupings of similar objects based on some reasonable criteria (Rosch & Mervis, 1975). In a seminal article, Rosch and Mervis (1975) have described categories as entities that “bear greatest family resemblance to other members of their own category and have the least overlap with other categories” (pp. 598-599). They have characterized categories as being marked by a “prototypical” relationship that category members share based on what Wittgenstein (1958) has termed “family resemblance” or family-like similarities (Rosch & Mervis, 1975, p. 598; Jacob, 2004). This view of categories has been accepted by scholars of linguistics (Spack, 1997; Spack, 1998; Nelson, 1998; Lakoff & Johnson, 2003), ethnomethodology—including Membership Categorization Analysis (MCA) (Day, n.d.; Eglin & Hester, 1999; Martin, O’Neill, Randall, & Rouncefield, 2007; Berkenkotter & Ravotas, 2002), sociology (Bowker & Star, 1999; Roth, 2005; Reicher & Hopkins, 2001), anthropology (Goodwin, 1994), and organizational communication (Dutton & Jackson,
1987), to name a few disciplines. This dissertation also conceives of categories as comprising prototypical members based on family-like similarities.

In an important book on categories’ practical significance, communication scholars Bowker and Star (1999) have defined them as “a set of boxes into which things can be put to then do some kind of work” (p. 10). They have asserted that categories are often porous, involve conflict, and function as “boundary objects” (p. 309), that is, they cater to multiple audiences with divergent interests. Moreover, Bowker and Star (1999) have described classifications as a “significant site of political and ethical work” (p. 319). Bowker and Star’s (1999) book is important for rhetoric scholars for a number of reasons. As shown by their discussion of classifications spanning professional and disciplinary boundaries, as “linguistic labels” (Dutton & Jackson, 1987, p.77), classifications’ main work is communication (Brand, 1991). Moreover, as Bowker and Star (1999) have pointed out, classifications influence organizational members’ responses and are associated with “political processes through which organizational actions are decided” (Dutton & Jackson, p. 84; Wolff, 2009). For these and similar reasons, Carolyn Miller (2002) and Popham & Graham (2008) have noted that rhetoric scholars can benefit from the work of Bowker and Star (1999). In addition, I have reviewed studies on classifications by scholars of rhetoric (Griffeth, Carson, Carson, Ragan, & Wan-Huggins, 1994; Johnson, Donohue, Atkin, & Johnson, 1994; McCarthy & Gerring, 1994; Taylor, 1996; Rauch, 1997; Wilson, 2000; Applen, 2001; Berkenkotter, 2001; Clark, 2008; Popham & Graham, 2008; Wolff, 2009). These studies have either explored constraints and benefits of classifications in organizations or they have examined rhetorical contestation of what Bowker and Star (1999) have termed ontological or “higher order” categories (p. 22).
Ontological categories have historically and chronically been subjects of disputes. An example is categories of person and nonperson in abortion debates.

My exploration of organizational categories involving conflict not only discusses how they constrain or enable agents but also show how they implicate significantly organizational issues of agency and power. I unpack these categories based on the theoretical framework of Anthony Giddens’s (1984) structuration theory. Structuration theory allows me to account for interactions between agents and structures in organizations. Additionally, my dissertation explores ontological categories of science and non-science in boundary-work disputes. Gieryn (1983, 2008) has defined the term boundary-work as referring to rhetorical strategies scientists and their allies use to separate science from non-science. However, Taylor (1996) has broadened this definition by including in the meaning of the term rhetorical strategies by those who challenge scientists and their supporters. This term—in Taylor’s (1996) sense—is key to my discussion of ontological categories of science and non-science. My dissertation extends Taylor’s (1996) analysis of changing rhetorical *topoi*, as well as examines a relatively underexplored basis for boundary-work—academic freedom. Moreover, I do so in a relatively underexplored setting of higher education. Below, I first review Bowker and Star’s (1999) comprehensive work on classifications, highlighting its important insights and pointing out areas where my dissertation seeks to build on their work. Next, I review rhetorical studies on classifications, briefly discussing their contribution and pointing out ways in which my work seeks to add to their insights. After I discuss Bowker and Star’s (1999) work and rhetorical studies on classifications, I provide a synopsis of my dissertation.
Bowker and Star (1999)

Bowker and Star (1999)’s largely historical treatment of classifications, including their uses, benefits, limitations, constituting factors, and the like, mainly covers the felicitous, working, and in their own words, “cooperative or convergent” classifications “across social worlds” (p. 15). In fact, they have acknowledged in the introduction that “throughout this book, [they] speak of classifications as objects for cooperation” (p. 15). The authors have explored “the creation and maintenance of complex classifications” (p. 5)—the key word in the quoted phrase being “maintenance” (which assumes cooperation). They have mainly examined two large “classification systems” or taxonomies (p. 325). These classification systems are the Nursing Interventions Classifications (NIC) and the International Classification of Diseases (ICD). The authors have provided several examples of balancing of conflicting stakeholder needs on the part of these two classification systems.

The NIC—which the authors have called “a boundary object . . . with a delicate cooperative structure” (p. 254)—attempts a balancing act between leaving some nursing tasks relatively undefined and hence invisible (e.g., finer details of nursing activities) while classifying other tasks nurses perform (e.g., “direct nursing interventions”). The relatively undefined nursing tasks are a necessary, if also taken-for-granted and invisible, part of a standardized classification system that seeks to promote consistency in the profession of nursing. Additionally, the relatively undefined nursing tasks allow nurses following the NIC to maintain a degree of autonomy. These reasons seem to provide a rationale for NIC’s decision to make certain nursing practices explicit through classifications while leaving some other practices unclassified.
Another instance of NIC attempting to achieve convergence is seen in its successful working despite the greater coverage it provides to the "nursing specialties of its developers," such as the "complex physiological domain," as opposed to nurses belonging to “community health or social-psychological care” (p. 247).

Yet another example of NIC’s effective management of conflicting views can be seen from NIC’s response to an alternative viewpoint offered by a Texas-based nursing researcher. Susan Grobe—who has advocated classifying nursing according to a broad set of categories while leaving standardization of nursing activities to computers (p. 243)—has characterized NIC’s attempts to standardize nursing tasks as “scientifically outmoded and inflexible” (p. 243). The proponents of the NIC, however, argue that irrespective of a computer’s ability to facilitate standardization, a uniform classification system is necessary to avoid different organizations’ adopting different classification schemes, albeit using computers. In summary, then, NIC is a classification system that successfully balances conflicting needs and viewpoints of its diverse stakeholders, an exercise in classificatory cooperation.

Similarly, the ICD, which Bowker and Star (1999) have described as “a panoply of tangled and crisscrossing classification schemes” (p. 21), “has been as heterogeneous as possible to enable the different groups to find their own concerns reflected” (p. 151). In fact, it even provides its stakeholders with rules for its own modification according to local needs (pp. 151-152). The ICD has been adopted by all countries of the world, “though not always the same version” (p. 110). Thus, the focus of Bowker and Star (1999)’s work has been on classifications that work “cooperatively” (to use the authors’ own characterization) (p. 158).
These classifications seek to achieve efficiency through balancing the needs of diverse and multiple stakeholders.

**Categories Involving Conflict**

However, Bowker and Star (1999) have not examined in-depth instances involving conflicts in classifications, such as the contested definition of “stillbirth” across religious and medical sites (p. 239) or disparate uses of ICD for medical specialists versus government statisticians or general practitioners (p. 145). Bowker and Star (1999) have acknowledged that they look at “the more muted cases posed by the ICD where the politics [are] quieter” (p. 324). In a chapter, they have examined racial categorization in South Africa during the apartheid era. This chapter mainly presents constraints faced by some actors on accounts of these categories, illustrated with the help of a few episodes. However, there is little detailed investigation of how conflicts involving racial categories play out between dominating and constrained agents. The chapter presents these categories as inconsistently interpreted but mostly as without creating significant conflict.

While classifications that work “cooperatively” may enlighten us about their important role in organizations and perhaps tell us something about how best to balance conflicting stakes, classifications mired in conflict may throw light on issues inhibiting successful classifications and posing significant challenges to organizational work. Specifically, exploring categories involving conflict may show us how power dynamics operate in organizations, with significant rhetorical consequences for organizational agents and structures. We might learn more about possibilities for all agents to wield power and gain legitimacy for their world views. In summary, these contested classifications afford us an
opportunity to examine, with a more comprehensive sweep, organizational contexts involving agency-structure interaction, persuasion, *ethos*, power, and ideology, among other issues. The first of my three dissertation articles—*Categories, Agency, and Power: A Structuration Analysis of the Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA)'s Response to Hurricane Katrina*—explores organizational categories involving conflict.

**Disputed Ontological Categories**

Additionally, Bowker and Star (1999) have not explored what they have described as “enduring and irreconcilable ontologies” (p. 21), or classifications involving larger questions, such as what is science, when does life begin, and the like. Chi, Slotta, and de Leeuw (1994) have described ontological categories as “epistemological suppositions of the nature of our conceptions about the entities in the world” (p. 29). Rauch (1997) has called them “fundamental categories” (p. 98), and Berlin (1972) has termed them “higher order categories” (p. 66). Calling such classifications “higher order issues” and “moral questions” (p. 24), Bowker and Star (1999) have acknowledged their disputatious nature but have maintained that ignoring (their word is “burying”) them is perhaps more important for knowledge-building work (p. 24). Again, the focus of Bowker and Star (1999) is on classifications that work successfully: “presentation of knowledge in a form that is transportable and usable” (pp. 239-240). They also appear to imply that exploring conflicting “higher order” classifications is impractical (p. 24).

Exploring ontological classifications is important for rhetoric and professional communication because these categories, perhaps more than others, point to complex, knotty,
and multifaceted nature of categorization. These categories are subject to diverse and multiple audiences and interpretations. In Burke (2001)’s words, “the Rhetoric deals with the possibilities of classification in its partisan aspects” (p. 1326). Understanding such categories may allow us to conceive of possibilities of rhetorical rapprochement among categorizing contestants, although in this dissertation I do not take up this problem. Besides, as pointed out by Gieryn (1983), such enduring categories (his example is that of science versus non-science or pseudo-science) are practically determined regularly even if they are not resolved ontologically as the phrase is understood in philosophy. By exploring (instead of burying) these classifications we gain a better insight into contrasting world views, including their multiple votaries, settings, purposes, audiences, rhetorical strategies, and consequences. Two of my articles explore the enduring ontology of science versus non-science in boundary-work disputes between evolution and its opponents: 1) Changing Rhetorical Topoi for Boundary-Work between Evolution and Its Opponents: From Popper’s Falsification Theory to Methodological Naturalism, and 2) Boundary-Work Involving Academic Freedom: Debating Intelligent Design in Higher Education. Next, I survey rhetorical studies on disputed organizational and disputed ontological categories to point out ways in which my dissertation adds to insights of these studies.

**Rhetorical Studies on Classification**

A number of rhetorical studies have explored disputed organizational or ontological classifications (Lessl, 1988; Prelli, 1989; McCarthy & Gerring, 1994; Griffeth, Carson, Carson, Ragan, & Wan-Huggins, 1994; Taylor, 1996; Rauch, 1997; Wilson, 2000; Applen, 2001; Berkenkotter, 2001; Popham & Graham, 2008; Clark, 2008; Wolff, 2009). These
studies have looked into various aspects of these classifications: their types, uses, purposes, constraints, benefits, contexts, and so on. Broadly, these studies can be divided into two groups: 1) studies exploring classifications’ constraints and benefits in organizations, and 2) studies exploring disputed ontological categories.

Studies Exploring Classifications’ Constraints and Benefits

These studies report on how organizational categories both constrain and enable agents (often different agents) in organizations. A few of the studies have drawn from Giddens’ (1984) structuration theory (Berkenkotter, 2001), which posits that structure and agency mutually constitute each other. Organizational communication and sociology scholars such as Orlikowski (1992) and Jenkins (2000) have related structuration theory to categories, meaning thereby that categories both constrain (as part of a structure) and enable (as appropriated and reproduced by agents).

Berkenkotter (2001) has explored an instance of the working of the Diagnostic and Statistical Manual of mental Disorders (DSM), a large classification system of mental healthcare. She has found that the classification system both enabled communication for and created conflict among different stakeholders. She has also reported that DSM allowed the therapist in her study to impose DSM categories over a narrative rendered by a patient. We however do not learn how constrained stakeholders or patients respond to the constraints they face on account of DSM’s categories.

In their study of the revision process for DSM IV, McCarthy and Gerring (1994) have reported on how DSM-III and IV reified the “biomedical” model of mental health, erasing in
some ways alternative models (p. 161). However, the authors have also described the new DSM-IV as “a respectable repository . . . standardizing the practices of a high-status profession” (p. 186). The authors have concluded that the classification system enabled a host of its stakeholders. The study does not explore constrained agents or stakeholders.

Griffeth et al (1994) have found that employee and gender classifications in a company negatively influenced some employees’ perceptions of organizational communication, supervisory support, and so forth. For example, temporary workers reported lower satisfaction on account of supervisory support. The authors concluded that these categories constrain some employees (lower morale for a few employees) while enabling organizational work. The study does not discuss the temporary workers’ response to constraining categories.

In a pedagogically-oriented article, Wilson (2000) has critiqued the medical category of disability. He has critiqued the category for constraints “medicalization” of this category imposes on those to whom it is applied (pp. 149-151). Applen (2001) has discussed benefits of large classification systems, such as the International Classification of Diseases (ICD), for designing Web sites for multiple audiences. Wolff (2009) has studied categories in a grant proposal form, finding that they constrained newcomers, especially those with less technological savvy.

Popham and Graham (2008) have examined categories in electronic medical charts used in a healthcare organization. They have found that the categories in these medical charts worked against providing a cohesive, coherent, and complete narrative to caregivers (p. 167). Additionally, the categories seem to provide precedence to the counselors’ voice in
comparison to that of the patient, a phenomenon also noted by Berkenkotter (2001). In short, Popham and Graham (2008) have stated that the categories had a constraining, along with a facilitating, impact.

In summary, these rhetorical studies enlighten us about categories’ differential impact on different organizational agents. Categories benefit organizational work while constraining some agents. They also tell us how categories allow some agents to gain power (the therapist in Berkenkotter’s, 2001, study; counselors in Popham & Graham’s, 2008, study). However, these studies are limited in that they do not tell us much (or anything at all) about how constraining categories are met by agents who are constrained by them. For example, how do newcomers in Wolff’s (2009) study respond to categories in the grant proposal form? We simply learn that some agents are constrained by some categories, and that is the end of the matter. In other words, it appears as though these studies describe various ways in which categories work, how they empower some agents while constraining others, and how they work either efficiently (as in the case of DSM) or not so well (as in the case of Popham & Graham’s, 2008, medical charts). My article about DHS and FEMA’s categories examines categories’ impact from the standpoint of both enabled and constrained agents. Besides, all of the studies referred to above involve constraints—namely, organizational conflict on account of categories—that are largely mild and manageable. In other words, these studies are similar to Bowker and Star (1999) in reporting on by and large convergent classifications. My DHS and FEMA article explores conflict on account of categories that was associated with catastrophic consequences.
Studies Exploring Disputed Ontological Categories

The remaining rhetorical studies of categories examine what Bowker and Star (1999) have called enduring ontologies or higher-order categories. These studies address timeless rhetorical distinctions we make and endlessly debate, such as what is a pure species and what is a hybrid species, what can be categorized as content and what as form, what is and is not science, and so on. Exploring such distinctions tells us about how rhetoric is inescapably interlinked with fundamentals of what we term knowledge. These categories are important to rhetoric and professional communication because they are perpetually contested by multiple contestants across multiple settings—with multiple and variable rhetorical strategies and consequences. It must be clarified that my use of the term “ontological categories” is similar to Bowker and Star’s (1999) sense of the term “enduring ontologies.” In other words, the term refers to enduring but practical—not philosophical—categories.

Rauch (1997) has explored “fundamental categories” (p. 98) of “hybrid” versus “true” species in a debate involving wildlife protection for red wolves. Her study sketched a few divergent opinions over the desirability of extending the endangered species protection to red wolves, differently categorized by different stakeholders as either being of true or of hybrid species. The debate ended with contending parties agreeing to protect the red wolf, albeit for different reasons.

Clark (2008) has examined the “superordinate” categories of “content” and “presentation” and their importance for content management systems. Historically, the two categories have tended to be both distinct (e.g., political separation between “truth” and rhetoric) as well as integrated (e.g., writing teachers’ insistence on the integration of form
and content) (pp. 41, 43). However, Clark (2008) has argued that the separation of these two “superordinate” categories may be a conceptual convenience for successful content management systems.

Finally, a number of rhetorical studies have explored “boundary-work” (Gieryn, 1983)—that is, rhetorical strategies for differentiation between ontological categories of science versus non-science in disputes between evolution and its opponents. As Gieryn (1983) has stated, these ontological debates are practical disputes involving these opposed, higher-order categories. Gieryn (1983) has given an example of a research proposal by a physicist that has a chance to win a National Science Foundation (NSF) grant versus a proposal submitted by a psychic. The NSF database “Scientists and Engineers Statistical Data System” (SESTAT) classifies academic disciplines according to the two categories of science and non-science (my emphasis).

However, as Taylor (1996) has pointed out, the rhetorically constructed category of science by the mainstream scientific community is actively contested by those who are on the fringes and believe that they are being excluded. This conflict is seen in the disputes involving evolution. Rhetorical boundary-work studies have mostly explored disputes between evolution and creation science in public schools. Most of these disputes were fought in 1980s (Lessl, 1988; Taylor & Condit, 1988; Prelli, 1989; Taylor, 1996). Rhetorical boundary-work studies have examined rhetorical topoi of science (scientific concepts that help rhetors draw boundaries around science) for boundary-work. These topoi include Popper’s falsification theory, methodological naturalism, Mertonian norms, and so on.
(Numbers, 2006). The studies have also provided rich contextual details involving actors and stakeholders in these disputes.

Categories of science versus nonscience are fundamental categories in our society (to borrow Rauch’s 1997, term). They are often debated in issues surrounding scientific questions. A recent example involves a conflict between two groups of anthropologists over whether their discipline should be categorized as science (Wade, 2010). The American Anthropological Association has recently decided to remove the term “science” from its long-term plan (Wade, 2010). This decision has come amidst a long-time conflict between the so-called science-oriented wing of anthropology (areas like archaeology), who are opposed to dissociating the field from science, and cultural anthropologists, who do not consider their work as belonging to science (Wade, 2010). The term “science” has been replaced in the latest long-term plan with the term “public understanding” (Wade, 2010).

Rosch (1978) has termed a categorization such as that between science and nonscience a “basic-level” type of categorization (p. 254). This type of categorization is the most “inclusive” (p. 253) and displays a high degree of prototypicality among its members. Put differently, Mervis and Rosch (1981) have indicated that “this is the level at which categories maximize within-category similarity relative to between-category similarity” (p. 92). Even though disciplines that claim to be science are diverse and multiple, these disciplines are often recognized as science areas without much difficulty. In fact, boundary-work depends on people making such simple, practical, rhetorical categorizations between science and nonscience (Gieryn, 1983).
To sum up, rhetorical studies of disputed ontological categories have explored categories of hybrid versus pure species, presentation versus content, and science versus non-science in disputes between evolution and scientific creationism in the setting of public schools. No rhetorical study has examined a boundary-work dispute involving evolutionary science and Intelligent Design (ID)—a new challenger in boundary disputes that emerged in the 1990s—in a public school or a higher education setting. Condit (2003) and Campbell (2003) have written commentaries on this dispute, but they have not explored an actual dispute. This dispute, like the earlier one involving scientific creationism, continues to cast light on our ontological categorization between science and non-science, especially in the field of education, involving both secondary schools and colleges and universities, where future generations learn and form their views about science and challenges to its authority. Two of my dissertation articles explore a debate between evolution and ID in a higher education scientific ecosystem. Thus I extend rhetorical boundary-work studies (Lessl, 1988; Prelli, 1989; Taylor, 1996), which have examined conflict between evolution and scientific creationism, to the more recent conflict between evolution and ID. I also add to rhetorical boundary-work studies, which have so far explored these disputes in public schools, an investigation of a boundary-work dispute in higher education. Both are important niches to fill.

Gieryn (1983) originally defined boundary-work as a scientists’ endeavor. He later added non-scientist supporters of scientists as other actors in boundary-work (Gieryn, 2008). However, Taylor (1996) conceived of boundary-work more broadly as contextual, historical, collaborative processes. If Taylor (1996) is correct, then boundary-work in public schools
and higher education, and that involving scientific creationism and ID, may have important differences that rhetoric scholars should know about. Moreover, one of my articles investigates academic freedom as a rhetorical *topos* for boundary-work, as opposed to rhetorical *topoi* of science that have largely been the focus of rhetorical boundary-work studies so far.

**Dissertation Organization and Summary**


The first article examines a conflict between DHS and FEMA involving a few organizational categories around the time of these organizations’ response to Hurricane Katrina. The second and third articles are based on a 2005 debate at Iowa State University between supporters of teaching only evolution and those supporting teaching and / or researching ID as well. What follows is a summary of the main claims of each of these articles and a brief description of the methods that I use in each article.

In the first article, I perform a close textual analysis of contested DHS and FEMA categories based on Giddens’s (1984) structuration theory. As pointed out by Orlikowski
(1995), structuration theory allows me to show how these categories both enable and constrain actors in both organizations. More important, I extend Orlikowski’s (1995) argument that some categories predominantly empower a group of agents while predominantly constraining another set of actors—a phenomenon Giddens (1984) termed legitimation or reification of discourses, that is, discourses of dominant groups in organizations. Drawing on Herndl and Licona’s (2007) conception of a kairos-based agency and Giddens’ (1984) concept of “unintended consequences,” I show that effects of reified and legitimated categories can be reversed. Specifically, my analysis suggests that FEMA agents who were constrained by legitimated DHS categories appeared to have been empowered by the same categories in a different context. Conversely, the powerful DHS agents, who dominated FEMA based on these categories, faced constraints on account of the very same categories with a changed context. This reversal of legitimated categories—or their delegitimation, as I term it—came about through an agent’s kairotic appropriation of his agency (Herndl & Licona, 2007) and the organizational members’ and stakeholders’ making sense of unintended consequences of these categories. Thus, my analysis shows that categories involving conflict can bring about fundamental power shifts in organizations.

My close textual analysis draws on multiple texts connected with DHS and FEMA’s response to the hurricane and a theoretical lens of structuration theory (Jasinski, 2001; Rosteck, 1999). I analyze two memos written by the organizational heads of DHS and FEMA as the organizations responded to Hurricane Katrina. Besides having a common context, the two memos contain leaders’ discourses, thus making them potentially suitable for analysis pertaining to questions of agency and power. I complement my analysis of the memos with
contextual information from several governmental and media reports that looked into the federal response to Hurricane Katrina. As pointed out, I use structuration theory because of the theory’s facility with analysis of dynamic agency-structure interaction (Orlikowski, 1992).

This article shows the important, even central, role categories can come to play in organizational work. Specifically, the article shows how categories are important tools in the exercise of organizational power and ideology. Exploring contested organizational categories may give us insight into competing organizational ideologies and the exercise of power by organizational members despite constraints. As Roth (2005) has pointed out, categories become more visible when they come apart. Categories not only empower or constrain agents (Berkenkotter, 2001; Popham & Graham, 2008; Griffeth et al, 1994; Wolff, 2009), but they are dynamic enough to undergo a near transformation in interactions with agents and larger organizational environment.

The second and the third articles in my dissertation are partly based on a 2005 debate at Iowa State University between supporters of teaching only evolution and those of teaching ID as well. In the second article, I carry out a historical and rhetorical analysis of the changing main rhetorical topos for boundary-work between the dispute of evolution and scientific creationism and that of evolution and ID. In so doing, I extend Taylor’s (1996) analysis of changing rhetorical topoi between disputes involving evolution on one hand and those involving Biblical or scientific creationism on the other. Exploring the changing topoi in these disputes provides an illustration of how boundary-work disputes are rhetorical at
their core and how they are fought mainly for public and institutional purposes (Kinsella, 2005; Shapin, 1992).

Specifically, my claim is that the main rhetorical topos for boundary-work between disputes of scientific creationism and disputes of ID has changed from Popper’s falsification theory (a test for a theory to be considered scientific) to methodological naturalism (a working assumption among scientists on what science at its root is) over the last three decades or so. This claim is based on Taylor (1996)’s notions of boundary-work as an achievement involving collaborating as well as competing actors and as historically and contextually variable. The change in the main topos seems to have been partly based on historical and rhetorical give and take among the contestants. Proponents of evolution have used methodological naturalism since the 1981-82 Arkansas trial (the topos of natural law in the trial). However, they have realized since then, based on their rhetorical exchanges with their opponents, that methodological naturalism allows them to present science as a distinct knowledge category that can simultaneously be respectful of other forms of knowledge such as religion.

My analysis is based on a close reading of multiple texts related to disputes between evolution and its opponents over the past three decades (Jasinski, 2001). As Jasinski (2001) has pointed out, historical investigations benefit from close textual analyses of multiple, related texts. I reviewed the following texts: the transcripts of my interviews with the two leading debaters, a statement issued by the Iowa State faculty rejecting ID as science, newspaper clippings of the debate, and case rulings and statements from legal disputes between evolution and its opponents. I base my analysis on the sociological and rhetorical
concept of boundary-work introduced by the sociologist of science Thomas Gieryn in his 1983 article. Boundary-work has been a key concept in exploration of contests between evolution and its opponents and has been used by scholars such as Gieryn (1983), Lessl (1988), and Taylor (1996) to understand rhetorical categorization of science and non-science in these disputes.

The third article in my dissertation analyzes boundary-work involving academic freedom in Iowa State’s debate. In this article, I look at a new, relatively unexplored basis for boundary-work besides rhetorical *topoi* of science, that is, rhetorical bases for boundary-work that include scientific terms and practices. Taylor & Condit (1988) have offered an insightful account of how academic freedom is used for boundary-work in public schools. However, I add to the analysis of this basis for boundary-work by comparing boundary-work involving academic freedom in public schools and higher education. I suggest that differences in academic freedom in public schools and higher education, along with rhetorical activity of agents premised on these differences, contribute to different boundary-work by both sides in two types of scientific ecosystems. Academic freedom is an important basis for rhetorical contestation over basic-level categories of science and non-science. Academic freedom has so far not been seen by boundary-work scholars as an important factor in these contests (Pennock, 2001). In summary, through this article, I not only add perspectives of higher education and ID to rhetorical boundary-work studies, but I also add an underexplored basis for boundary-work—academic freedom. This article points to differences in boundary-work involving academic freedom in scientific ecosystems of public schools and higher education. These differences are important for us because boundary-work
disputes are mainly about scientific education. The article also suggests that scientific ecosystems of higher education may offer avenues for greater dialogue among competing classifiers in boundary-work disputes—though this is not a problem this study takes up. Another interesting question the article implies—but does not answer—relates to whether the rhetorical category of science is differently perceived by popular audiences in relation to scientific ecosystems of public schools and higher education.

My rhetorical analysis in this article is based on a close reading of multiple texts related to disputes between evolution and its opponents, including texts related to Iowa State’s debate mentioned above (Jasinski, 2001). Close reading, also known as close textual analysis, is a method of rhetorical analysis focusing on either single or multiple texts (Jasinski, 2001). I reviewed extensively guidelines and statements on academic freedom by the American Association of University Professors (AAUP) and allied organizations. In addition, my analysis was guided by Gieryn (1983) and Taylor’s (1996) views of rhetorical boundary-work.

In conclusion, my dissertation explores rhetorical contestation and consequences of organizational categories involving conflict and disputed ontological categories. My analysis shows how these disputed categories significantly connect to issues of knowledge, agency, power, values, and so forth, for multiple actors. Disputed classifications help us understand how knowledge is rhetorically negotiated in organizations. Disputed classifications help us see that organizational resources and power are not a given even for powerful organizational actors. Disputed classifications are thus powerful rhetorical lenses that can provide us with intricate and detailed view of organizational actors and work. These categories might well be
precious resources for rhetorical investigation of complex organizational work. While we have a number of rhetorical studies that look at different affordances and constraints classifications present, we need more studies that can tell us why disputed classifications are key to understanding complex organizational work.

References


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After 9/11, the Department of Homeland Security (DHS) was created to oversee and neutralize all national security threats, including natural disasters (“U.S. Senate,” 2006). Consequently, over 22 federal government organizations, including the Federal Emergency Management Agency (FEMA), an organization heretofore responsible for responding to both natural and manmade disasters, were placed under DHS (“U.S. Senate,” 2006; Grunwald & Glasser, 2005). DHS and FEMA came under considerable scrutiny in 2005 over their inadequate response to Hurricane Katrina. Among reasons cited for their poor response, well-documented by several congressional and a White House investigation as well as the media, were problems relating to categories with conflicting interpretations in the two organizations (“U.S. House,” 2006).

Describing perhaps the most salient of these categories, Michael Brown, FEMA’s then head, told the Senate Committee on Homeland Security and Governmental Affairs that “there’s the whole clash of cultures between DHS’ mission to prevent terrorism and FEMA’s mission to respond to and to prepare for responding to disasters of whatever nature” (“Senate Committee,” 2006). Brown was referring to a key category for both organizations called variously as “All-Hazards Preparedness / Capabilities / Approach” (hereafter referred to as
“All-Hazards Capabilities”) (“U.S. House,” 2006). This category was differently interpreted by DHS and FEMA officials. While DHS interpreted the category to mainly mean prevention of terrorism, FEMA interpreted the category more broadly as including all types of disasters, both manmade and natural. The conflicting interpretations of this category on the part of the two organizations had disastrous consequences for their response to Hurricane Katrina (“U.S. House,” 2006). These consequences included an underfunded, understaffed, and undertrained FEMA that could not effectively respond to the hurricane (“U.S. House,” 2006). In this article, I explore connections between some of the categories in DHS and FEMA involving conflicting interpretations (hereafter, simply, categories involving conflict) on the part of the two organizations and issues of agency and power in both organizations. Exploring these connections will help us understand the interplay and intricacies of agency and power in DHS and FEMA at the time of their response to Hurricane Katrina. Specifically, I analyze two memos written by then heads of FEMA and DHS—Michael Brown and Michael Chertoff, respectively—as they directed their organizations’ hurricane response. My analysis also includes textual evidence from several governmental reports and media accounts of DHS and FEMA’s hurricane response (see Methods – Appendix).

Organizational categories involving conflict—that is, established categories in organizations facing conflicting interpretations or needs of different organizational stakeholders (employees, customers, and so on)—have been infrequently explored by scholars of rhetoric and professional communication (McCarthy & Gerring, 1994; Griffeth, Carson, Carson, Ragan, and Wan-Huggins, 1994; Wilson, 2000; Berkenkotter, 2001; Popham & Graham, 2008; Wolff, 2009). Berkenkotter (2001) has studied a therapist’s uses of
categories of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) to “recontextualize” (p. 341) a patient’s problems in ways that met conflicting needs of the physician, the insurance company, and so on. While Berkenkotter (2001) offers an elaborate discussion of the therapist’s agency managing conflicting needs of her stakeholders, she does not tell us much about the agency of the patient whose narration was recontextualized or about that of the organizational stakeholders who may have been constrained by the categories. Griffeth, Carson, Carson, Ragan, and Wan-Huggins (1994) have found that employee and gender classifications were related to different employees’ perceptions regarding their benefits and work conditions. While the authors theorize about potential organizational conflict surrounding these classifications, they do not tell us about the agency exercised by the hourly workers in the face of constraints they perceived on account of these categories. Similarly, Popham and Graham (2008) and Wolff (2009) have examined categories contributing to organizational conflict with respect to organizational goals, employees’ needs, and so on. However, these studies do not discuss how organizational goals or employees constrained by these categories respond. So, in summary, rhetorical studies on organizational categories involving conflict do not tell us much about how organizational stakeholders who are constrained by established these categories respond to the constraints they face on account of these categories.

Anthony Giddens’s (1984) structuration theory helps explore categories involving conflict from the standpoint of both enabled and constrained organizational actors, giving a fuller view of organizational conflict involving categories. Structuration theory allows us to see implications of categories involving conflict for agency and power of constrained
organizational actors. According to Giddens (1984), structure both constrains (as a medium) and enables or empowers agents (as an outcome). Applying Giddens’s (1984) structuration theory to categories in information science, Wanda Orlikowski (1995) has posited that categories simultaneously constrain and enable agents. She has suggested that categories should be viewed through the lens of structuration theory (Giddens, 1984) because the theory offers a balanced view of structure (which includes categories) and agents (who create and recreate them).

Organizational communication and rhetoric scholars, among others, have used structuration theory to discuss organizational discourses, including those responding to disasters (Bogard, 1988; Aronoff & Gunter, 1992; Herndl, 1993; Orlikowski, 1992; Barley & Tolbert, 1997; Pelling & Uitto, 2001; Fairhurst, Cooren, & Cahill, 2002; Berends, Boersma, & Weggeman, 2003; Herndl & Licona, 2007). For example, Pelling and Uitto (2001) have described interaction between organizations providing protection against natural disasters and social, economic, and political forces. Aronoff and Gunter (1992) have shown how discourses both enable and constrain agents. No rhetorical study has applied structuration theory to exploration of organizational categories.

Moreover, rhetorical scholars have studied discursive, social, organizational, and communication-related issues of disasters such as the 1986 Space Shuttle Challenger disaster or the 1979 Three Mile Accident (Mathes, 1986; Arnold & Malley, 1988; Winsor, 1988; Pace, 1988; Winsor, 1990; Herndl, Fennell, & Miller, 1991; Gross & Walzer, 1997; Farrell & Goodnight, 1998). These studies have examined organizational discourses, narratives, and media and government texts concerning the two disasters. However, these studies have not
explored categories implicated in an organizational disaster. Herndl, Fennell, & Miller (1991) explore the role of social groups within organizations involved in the disasters. However, the authors conclude that these social groups—or social or functional categories within the organizations—did not seem to contribute to the discursive misunderstanding among organizational members that was seen as key to the triggering of the disaster. Although the authors seem to have conceived of distinct organizational groups as “institutional categories” (Makitalo, 2004, p. 3), the authors do not explicitly use the term categories to describe these organizational groups.

Categories, as “linguistic labels” and part of structure, guide and enable organizational agents (Dutton and Jackson, 1987, p. 77). Moreover, they are related to “power and values” (Miller, 2002). Thus they engage critical questions relating to both structuration theory and rhetoric and professional communication. Hence, they merit a closer examination through the lens of structuration theory (Giddens, 1984), as the theory allows us to see categories as dynamic yet powerful constructs (Orlikowski, 1995).

Orlikowski (1995) has further posited that constraining and enabling—that is, structuration—of categories can only be observed “empirically,” based on their contents, contexts, and effects (Orlikowski, 1995, p. 76). Moreover, relating categories to power, Orlikowski (1995) has theorized that some organizational categories may be mostly constraining to some agents while being mostly enabling to other agents. She has given an example of racial categories of South Africa during the apartheid era. These categories gave enormous power to the government while severely constraining the majority of citizens (Orlikowski, 1995, p. 73). Giddens (1984) has termed such an extreme imbalance in power
“legitimation” or “reification” of some organizational discourses over others (p. 33, p. 180). In an article discussing structuration and technology, Orlikowski (1992) has stated that even legitimated or reified discourses can be challenged and their effects reversed. However, in her article on categories, Orlikowski (1995) does not discuss possible reversal or undoing of reified categories. My contention in this article is that reified or legitimated categories need not endemically be characterized by extreme imbalance in power. Specifically, I argue that categories mostly constraining to some organizational agents in some context(s) may be mostly enabling to them in some other context(s) and vice versa. In other words, reified or legitimated categories can become un-reified or delegitimated, to coin alternative terms, depending on the context. This view of reified categories helps us see power and agency in organizations as shifting or only temporarily stable (Herndl & Licona, 2007). Herndl and Licona (2007) have described this view as follows: “both agency and authority can be constrained by discursive structures but not completely” (p. 148). They have described agency as comprising not only material and semiotic but kairotic resources. While agreeing with this notion of agency, I argue that context may not merely help mitigate reification, as Herndl and Licona (2007) seem to suggest; rather, context may on occasions help reverse reification. That is, given changes in conditions, tables can be turned on those who dominate through reified categories. I further argue that a reversal in effects of reified categories may be brought about by agents acting kairotically —as Herndl and Licona (2007) have posited with respect to mitigation of reified discourses—based on what Giddens (1984) has called “unintended consequences” of actions (p. 294), including “perverse consequences” (p. 317). Additionally, I argue that “unintended consequences” (Giddens, 1984, p. 294) of categories may themselves catalyze a reversal in effects of reified categories based on agents’
“discursive penetration”—another term by Giddens (1979, p. 208)—or awareness of changed conditions and lessons learned (Fairhurst, Cooren, & Cahill, 2002, p. 532).

The concept of “unintended consequences” (Giddens, 1984, p. 294) was first systematically discussed by the sociologist Robert Merton in a 1936 article titled “The Unanticipated Consequences of Purposive Social Action.” Merton (1936) attributed “unanticipated consequences” (p. 894) of purposeful and socially constructed actions to five factors influencing agents: “ignorance” (p. 900), “error” (p. 901), “immediacy of interest” or a short-term focus (p. 901), “fundamental values” or an ideological predisposition (p. 903), and “prediction” or a proffered forecast (p. 903). Giddens (1984), borrowing the concept from Merton (1936), has described “unintended consequences” as simply “certain specifiable consequences” of actors’ rational actions that “they do not intend” (p. 297). Moreover, “knowledgeability of human actors is always bounded” by unintended consequences of action (p. 282). A class of unintended consequences, “perverse consequences” are “brought about in circumstances of structural contradiction” (Giddens, 1984, p. 317). Scholars of organizational and management communication, among others, have noted how unintended / perverse consequences help shape organizational discourses (Goulder, Jacobsen, & van Benthem, 2009; Florian et al, 2006; Berends, Boersma, & Weggeman, 2003; Bogard, 1988; and Fairhurst, Cooren, & Cahill, 2002). In summary, I argue that both agents and unintended / perverse consequences play an important role in reversals or undoing of reified categories. In this way, my contextual view of reified categories adds to rhetoric scholars’ understanding of Giddens’ (1984) concept of “legitimation” (p. 33)—discourses of dominant organizational actors—as indeed also to our understanding of the concepts of structure and agency.
My Analytical Framework

For my analytical framework, I modify slightly Giddens (1984)’s three interlinked “dimensions of structure”: “signification,” “domination,” and “legitimation” (pp. 30-31). I also use for my analysis his related concepts of “ideology” and “reification” (pp. 30-31). According to Giddens (1984), “signification” refers to communicative “signs,” “rules,” or “modes of discourse” in organizations (pp. 31-32). Organizational studies scholar Pushkala Prasad (2005) also includes among the meanings of the term “scripts, codes, and conventions of communication” (p. 187). Categories are one kind of “signs” that seem close in meaning to what Giddens (1984) calls “rules that are not merely discursively formulated but also formally codified” (p. 23). In fact, a little later, Giddens (1984) himself refers to these rules as “the remaining categories” (p. 22) after his discussion of other “trivial procedures followed in daily life” (p. 22) that are “discursively formulated” but not “formally codified” (p. 23).

Since my analysis involves categories and because categories are a type of “signs” (Giddens, 1984, p. 31), as just explained, I use the term “categorization” instead of Giddens’ (1984) “signification” (p. 31) to refer to uses of DHS and FEMA’s categories. Indeed, along with other “signs” (Giddens, 1984, p. 31), such as scripts or oral discourses, categories or categorization is essential for structuration to go on.

Domination refers to control over “authoritative” and “allocative” resources (Giddens, 1984, p. 33). Signification (or categorization) and domination are interlinked in that “signs” (or categories), as mediums, can constrain (or limit) the acts of agents, but “signs” can also allow agents to gain power (domination), helping them to reproduce “signs”
or categories as modified outcomes (Giddens, p. 31). Legitimation refers to domination of
certain discourses (“signs” or categories) over others in organizations achieved through
“ideology,” or signs or categories controlled by dominant organizational groups (Giddens, p.
33). Moreover, signs, in their ideological form, may be subject to “reification,” taking on an
appearance of having fixed or “thing-like properties” (Giddens, p. 180). In summary,
structuration theory posits that “signification” (or categorization) and “domination” (power)
through “ideology” or “reification” lead to “legitimation” of certain discourses over others in
organizations. Before I begin my analysis of DHS and FEMA’s categories, a brief historical
overview of the two organizations will provide the required context.

**DHS and FEMA: A Historical Overview**

DHS was created after 9/11 as a unified department to better deal with all national
emergencies, be they natural disasters or terrorist incidents (“U.S. Senate,” 2006). Created by
Prior to DHS, FEMA had been the main federal agency “charged with preparing for and
responding to both natural and man-made disasters” (www.fema.gov). Established by
President Jimmy Carter in 1979 as a central agency incorporating dozens of federal
emergency-related agencies, FEMA led federal disaster management operations for more
than two decades (www.fema.gov). FEMA’s performance was especially praised during the
90s, when James Lee Witt, an emergency professional handpicked by President Clinton,
turned the agency into a model disaster response organization (Manjoo, 2005).

However, after the terrorist attacks of 2001, policy makers realized that FEMA could
not on its own prevent or prepare for possible terrorist incidents, which required involvement
of law enforcement agencies (Grunwald & Glasser, 2005). Therefore, FEMA was merged into the newly-created DHS, which also included departments and agencies concerned with law enforcement (www.dhs.gov), such as the United States Coast Guard, the Transportation Security Administration (TSA), and the like (www.dhs.gov).

In short, FEMA and DHS both represented efforts to consolidate federal emergency management operations, FEMA during the early 1980s and DHS in the early twenty-first century. FEMA was merged into DHS in the hopes that, FEMA’s experience of disaster management, when augmented with that of multiple other agencies, many of which dealing with law enforcement, would provide an answer to security challenges of the new century (“U.S. Senate,” 2006). Indeed, a report commissioned by Congress in early 2001, before the attacks, recommended that a larger national security organization be created and FEMA assigned a major role within such an organization (“U.S. Senate,” 2006). In reality, however, after DHS’s creation, FEMA was marginalized (Grunwald & Glasser, 2005). FEMA’s merger with DHS should be seen in light of this history.

FEMA’s merger with DHS created problems of agency and power typical of organizational mergers (Glasser & Grunwald, 2005). Conflicting views prevailed over areas for which FEMA was responsible and resources to which it was entitled” (Grunwald & Glasser, 2005). Michael Brown, the head of FEMA at the time of Hurricane Katrina, complained of “structural problems stemming from FEMA being made a part of the Department of Homeland Security” (“Brown says,” 2006). Echoing Brown, the Senate Committee on Homeland Security and Governmental Affairs concluded that “Hurricane Katrina exposed flaws in the structure of the Federal Emergency Management Agency
(FEMA) and the Department of Homeland Security (DHS) that are too substantial” (“U.S. Senate,” 2006, p. 607). These conflicts were essentially power struggles (Grunwald & Glasser, 2005). In particular, as we will see, DHS removed important responsibilities and resources from FEMA and assigned it to an organization having law enforcement experience (Grunwald & Glasser, 2005). These developments adversely affected FEMA in terms of morale, employee turnover, and disaster management capabilities (“U.S. House,” 2006).

A Structuration Analysis of DHS and FEMA’s Categories

Before beginning the analysis of the two memos by FEMA’s Brown and DHS’s Chertoff, it may be better to briefly place these communications in a broader context. Hurricane Katrina was first spotted as a tropical depression over the Bahamas on August 23rd and made its second and more disastrous landfall as a Category 3 storm early morning on August 29 in Plaquemines Parish, Louisiana (“White House,” 2006). On August 27, President Bush had declared a federal emergency for Louisiana (“White House,” 2006). The next day, he issued similar declarations for Mississippi and Alabama, the other two states expected to be affected (“White House,” 2006). A presidential emergency declaration brings to bear full federal resources to meet a disaster (“White House,” 2006). However, such a declaration prior to a hurricane’s landfall is “extremely rare” (“White House,” 2006), an indication of the seriousness of Hurricane Katrina. Additionally, on August 27th, then director of the National Hurricane Center (NHC), Max Mayfield, personally called state and local officials in the states expected to be affected by the hurricane to impress upon them the seriousness of the catastrophe (“White House,” 2006). Michael Brown of FEMA also urged his staff to take this storm “very, very seriously” (“White House,” 2006, p. 28).
28. Brown moved to Baton Rouge, Louisiana, to monitor the storm from there (“White House,” 2006). It was from his new place of posting that Brown wrote his memo to his boss, DHS’s Chertoff, requesting the agency’s attention and help (the first of two memos I analyze). Chertoff responded with a memo the next day, making Brown the Principal Federal Official (PFO) to deal with the aftermath of the storm (the second memo in my analysis).

My analysis of the two memos is divided into three parts. First, I discuss categorization and domination. These two aspects go together, as they are mutually dependent, in that categories (along with other “signs”) are a means for domination (power) and domination (power) is an effect of “signs,” including categories (Giddens, 1984, p. 31). In the second part, I take up ideology, reification, and legitimation, as the use of the first two is necessary to achieve the third, for Giddens. Finally, in the third part, I discuss the ramifications of these categories for actors and structures in FEMA and DHS and offer my contextual account of reversal of reified or legitimated categories. I now turn to my analysis of the memos.

Brown’s memo (Figure 1) to his boss Michael Chertoff, Secretary, DHS, is the first of the two memos I analyze. I reproduce the entire memo except an attached list of requirements to which Brown refers to at the end of the first paragraph. Also not shown in Figure 1 is FEMA’s letterhead on which the actual memo is printed.

August 29, 2005

MEMORANDUM TO: Michael Chertoff
Secretary of Homeland Security
FROM: Michael D. Brown  
Under Secretary  

SUBJECT: DHS Response to Katrina  

We are requesting your assistance to make available DHS employees willing to deploy as soon as possible for a two-week minimum field assignment to serve in a variety of positions. We anticipate needing at least 1000 additional DHS employees within 48 hours and 2000 within 7 days. Attached is a list of requirements that employees will have to meet before deploying.

It is beneficial to use DHS employees as it allows us to be more efficient responding to the needs of this disaster and it reinforces the Department’s All-Hazard’s Capabilities. Also, DHS employees already have background investigations, travel cards and badges, all items that normally delay filling our surge workforce. FEMA Response and Recovery operations are a top priority of the Department and as we know, one of yours.

We will also want to identify staff with specialized skills such as bilingual capabilities, Commercial Driver’s License (CDL), and logistics capabilities.

Thank you for your consideration in helping us meet our responsibilities in this near catastrophic event.

Figure 1: Brown’s Memo  

In the following analysis of this memo, I first take up categorization and domination. The categories I examine include the “institutional categories” of DHS and FEMA (Makitalo, 2004, p. 5), including categories from the “category system” (Orlikowski, 1995, p. 73) or the taxonomy of the National Response Plan or NRP. Next, I analyze the memo for issues related to ideology, reification, and legitimation. Finally, I take up delegitimation of a key DHS and FEMA category.

Categorization and domination

- The Two Larger Institutional Categories of FEMA and DHS

In the backdrop of the history of these two organizations, I consider them as two larger institutional categories because both organizations, although conjoined, enjoyed
distinct areas of responsibilities, despite confusion over some areas (Glasser & Grunwald, 2005). Certainly, the employees of these two organizations seem to have seen themselves as “FEMA” or “DHS” employees, as evidenced from both Brown and Chertoff’s memos. Indeed, these two larger institutional categories were used by the two organizations in relation to various tasks, as we will see. For example, in his memo, Brown repeatedly categorizes response tasks and responsibilities as either DHS’s or FEMA’s. Additionally, all the congressional committees investigating the federal response to Hurricane Katrina, as well as media outlets criticizing the response, referred to these two organizations as if they were two entities or categories. Finally, as pointed out, different interpretations of an important category called “All-Hazards Capabilities,” which I analyze later, by the two organizations played an important role in their response to the hurricane. Thus, considering these two organizations as two larger institutional categories at the time of Hurricane Katrina for analytical purposes seems justified.

In his memo, Michael Brown, FEMA’s chief, uses larger categories of DHS and FEMA for various purposes with simultaneous constraining and enabling effects. He uses a FEMA letterhead (not shown in Figure 1) for his memo to Secretary Chertoff, DHS’s head and Brown’s boss, in conjunction with a subject line that reads, “DHS Response to Katrina.” If one also considers the last sentence of the second paragraph (“FEMA Response and Recovery operations are a top priority of the Department . . .”), and the last sentence of the memo (“Thank you for your consideration in helping us meet our responsibilities . . .”), the contradiction becomes even more stark. In all three places or “signs”—a FEMA letterhead, the last sentence of the second paragraph, and the last sentence of the memo—the memo categorizes the Katrina response as a FEMA task, suggesting Brown’s quest for more power
and enablement within DHS. Yet the subject line categorizes the operations as a DHS task (a constraint for Brown).

Behind this apparent contradiction there probably lies a balancing act on the part of Brown between FEMA’s need for more autonomy (power or enablement) on one hand and the need on the other hand for him to adhere to an established chain of command (a constraint for Brown and FEMA). FEMA is a subordinate organization of DHS and Brown is answerable to the Secretary, DHS (a constraint). Although Brown wants the response operations to be a FEMA responsibility (more power and enablement for himself and FEMA), he does not want to be seen as trying to usurp the authority of FEMA’s parent organization (a constraint for Brown and FEMA). Put differently, Brown is unable to avoid categorizing the response operations as a DHS task in the subject line of the memo, a prominent and visible sign in the memo (a constraint for Brown). Yet the mention of DHS in the subject line (a constraint) also allows Brown to use FEMA’s letterhead and refer to FEMA, directly or indirectly, within the memo to declare that the response operations are essentially a FEMA task (an attempt to gain power and enablement within DHS). Thus, Brown uses a constraining category (DHS) in the memo to gain power for himself and FEMA. At the same time, Brown also uses the category of FEMA for enablement and power, despite constraints that the category poses for him with respect to the subject line.

It should be noted here that Brown’s use of a FEMA letterhead and his one explicit mention of the category of FEMA are ironic considering that after its merger with DHS, FEMA was rechristened as Emergency Preparedness and Response (EP & R), a category Chertoff uses in his memo written just a day after Brown’s memo, as we will see.
As two larger institutional categories, DHS and FEMA are probably routinely used in these organizations’ communications. However, Brown’s using DHS four times in the body of the memo and FEMA just once indicate DHS’s domination and power over FEMA, especially given that DHS is also mentioned in the subject line (a constraint for Brown and FEMA). In contrast, although FEMA is explicitly mentioned just once in the body of the memo, a number of first person pronoun references to FEMA (through words such as “we” and “us”) in the body of the memo, coupled with FEMA’s letterhead, allows Brown to stake a claim for more resources (power) for FEMA. Thus, an apparent constraint (more mentions of the category of DHS) is used by Brown to gain power and enablement for himself and FEMA, because a higher visibility of the category of DHS in the memo may be interpreted by the head of DHS (and perhaps other DHS officials) as Brown trying to be an obedient member of the larger organization (DHS). At the same time, through relatively less visible first-person pronoun references to FEMA, Brown seeks to establish that the Katrina response efforts are a FEMA task, in an effort to gain power for himself and FEMA. Simultaneously, however, the category of FEMA poses constraints for Brown because it is a subordinate category of DHS and cannot be seen as leading the response efforts (hence mostly indirect references to FEMA). Also, as pointed out, FEMA has been renamed as EP & R and no longer exists as FEMA (a constraint because Brown uses the term FEMA).

Furthermore, Brown’s mention in the memo of the number of employees he requires from DHS, when he requires them, and the time for which these personnel are needed are expressions to gain power (to act despite constraints), even though the fact that Brown has to request and be dependent on DHS for these resources is a constraint for FEMA. Giddens (1984) has pointed out that “rules” and “resources” work together in structuration (p. 17).
The resource crunch faced by FEMA in the months preceding Hurricane Katrina was noted by the Senate Committee on Homeland Security and Governmental Affairs in its report ("U.S. Senate," 2006). Referring to FEMA’s personnel shortage, the report stated, “Over the last few years, FEMA has suffered numerous personnel problems, hindering its ability to prepare for and respond to a catastrophic event” ("U.S. Senate," 2006, p. 216). In fact, when Hurricane Katrina struck, three out of five FEMA officials looking after natural disasters and nine out of its 10 regional directors were “temporary fill-ins” (Grunwald & Glasser, 2005). An additional point regarding Brown’s request for DHS personnel is that the details he provides help establish Brown as an “expert” or a person in command, thus gaining power for him and FEMA.

Finally, Brown’s mention of the DHS “signs” of travel cards, badges, and background investigations appears to be intended for gaining power because these signs have a law-enforcement angle considered important within DHS due to its preoccupation with terrorism-related threats, as we will see. At the same time, it is clear from his reference to these signs that there is an advantage to DHS employees as far as these “signs” go, because DHS employees already possess the necessary clearances in connection with these signs. Conversely, the lack of requisite clearances for these signs among FEMA employees often delays their mobilization, a constraint noted by Brown. Brown’s uses of the two larger institutional categories of DHS and FEMA with simultaneous constraining and enabling effects illustrates Orlikowski’s (1995) argument about categories being simultaneously constraining and enabling.
• The DHS Category of “All-Hazard’s [sic] Capabilities”

“All-Hazard Capabilities” was a central category for DHS and FEMA because it encapsulated their fundamental approach to national security (“White House,” 2006). The category is taken from the National Response Plan (NRP), the backbone of DHS (until 2008, when it was replaced) (www.dhs.gov), where it is defined as including “terrorism, major natural disasters, and other major emergencies” (“U.S. Department of Homeland Security,” 2004). However, as pointed out, both DHS and FEMA used this category differently (Grunwald & Glasser, 2005). While Brown used it to mean both terrorism as well as natural disasters, for DHS the category of “All-Hazards Capabilities” seems to have largely meant preventing possible terrorist attacks (Grunwald & Glasser, 2005; “U.S. House,” 2006). Not surprisingly, DHS’s view prevailed since it was a supervisory organization of FEMA (“Grunwald & Glasser, 2005). As I will explain separately, this category became a legitimated or reified category for FEMA and Brown (“Grunwald & Glasser,” 2005; “U.S. House,” 2006). Here, I illustrate this category as simultaneously constraining and enabling (Orlikowski, 1995).

Although the memo’s context (a hurricane of Katrina’s magnitude) overwhelmingly justifies Brown’s request for additional personnel from DHS, he still couches his request in terms of the category “All-Hazards Capabilities” (“It is beneficial to use DHS employees as it allows us to be more efficient . . . and it reinforces the Department’s All-Hazard’s Capabilities”). Brown’s framing of his request in terms of this category can be seen as a constraint, in that such a powerful justification for his request as a hurricane of the magnitude of Katrina is apparently not enough by itself. On the other hand, if one considers that the category of “All-Hazards Capabilities” was part of the mission statement for the National
Response Plan (NRP) (“U.S. House,” 2006), a category system developed and to be implemented by DHS (www.dhs.gov), one can appreciate Brown’s reasons for using the category. Brown uses it to persuade his supervisor, the head of DHS, which is the organization responsible for the implementation of the NRP. Thus the category simultaneously constrained and enabled Brown (Orlikowski, 1995). However, this category turned out to be even more important for Brown, as we will see.

- **The category of “Catastrophic Event”**

  Brown’s use of the term “near catastrophic event” to describe Hurricane Katrina in the memo’s last paragraph is also meant to gain power or persuasion for his request. The National Response Plan (NRP) defines a category of emergencies known as “Catastrophic Events” (“U.S. Senate,” 2006, p. 206). These events are defined by the plan as “any natural or manmade incident, including terrorism, that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions” (“U.S. Senate,” 2006, p. 206). Brown is cautious in using this special NRP category to describe Hurricane Katrina, which is evident from his use of the qualifying word “near.” Apparently, Brown is not sure at this point whether the hurricane deserves to be categorized as a “catastrophic event.” Why Brown qualifies Katrina as a “near catastrophic event” is not clear. The White House’s review of the federal response to Katrina hinted that the category was not operationally clear (“White House,” 2006). The reason for this lack of clarity was that an “NRP Catastrophic Incident Supplement” meant to provide detailed guidelines post any declaration of a “catastrophic event” was still being drafted when Hurricane Katrina struck (“White House,” 2006, p. 18). However, if the category was entirely inoperational, Brown’s using it even with
a qualifier is puzzling. Another possible—perhaps more likely—explanation for Brown’s adding a qualifier to the category is that, even though the category was defined in the NRP, Brown was confronted with having to use it in the immediate aftermath of the hurricane (August 29th) and may not have known the extent of the damage to confidently use the category without any qualification.

This lack of clarity about whether or not the special category applies in the present context (Hurricane Katrina) is a constraint, in so far as Brown’s ability to use this category is concerned. However, he still uses the category in an enabling manner by adding a qualifier (“near”) to it. His qualified use of the category seems to make his request more powerful than it might have been in the absence of even a qualified mention of this special NRP category. Additionally, the category meant greater federal resources for the affected states (“White House,” 2006). This aspect of the category, even though it had been used with a qualifier, would have been attractive to Brown and FEMA, as it was experiencing a resource scarcity (“U.S. House,” 2006; Grunwald & Glasser, 2005). In summary, Brown was simultaneously constrained and enabled by this category (Orlikowski, 1995). I now turn to issues of ideology, reification, and legitimation in Brown’s memo involving the key category of “All-Hazards Capabilities.”

*Ideology, Reification, and Legitimation*

The NRP category of “All-Hazards Capabilities,” in Brown’s memo, was used by DHS normatively, as a tool for legitimation, ideology, and reification (Giddens, 1984). DHS’s ideology based on this category was to focus on terrorism-related threats, as opposed to Brown and FEMA’s insistence that the category should focus on all disasters (Grunwald & Glasser, 2005; “U.S. House,” 2006). DHS’s focus on terrorism-related threats can be seen in
the fact that three out of four dollars in grant programs for first responders in 2005 were meant for terrorism-focused issues (Manjoo, 2005). Similarly, while more than $2 billion in grant money was available to local governments to prepare for terrorism-related threats, only $180 million were available for preparing for natural disasters (Manjoo, 2005). This legitimated category thus “predominantly” constrained Brown and FEMA (Orlikowski, 1995, p. 76), illustrating Orlikowski’s (1995) point that there often exists in an organization a category that is mostly constraining to a group of agents (FEMA) while being mostly enabling to another group of agents (DHS). The category also comes across as a reified term for DHS and FEMA. It appears to have become almost a byword for DHS, even though, clearly, the organization lacked such capabilities (as seen in the organization’s disastrous Katrina response), nor did it probably have a uniform definition of the category (as seen in the differing conceptions of the category in DHS and FEMA).

DHS’s preoccupation with terrorism led to disruption in FEMA of a well-established disaster management process called the “integrated emergency management” (“U.S. Senate,” 2006, p. 221). This process involves four elements: “mitigation,” “preparedness,” “response,” and “recovery” (“U.S. Senate,” 2006, p. 221). While response and recovery are concerned with the post-disaster well-being of an affected region, preparedness and mitigation are ongoing aspects of training local responders and doing other necessary groundwork to prepare for a possible disaster strike (“U.S. Senate,” 2006). Because DHS focused too strongly on terrorism-related threats, it reduced FEMA to being primarily a response and recovery agency (Grunwald & Glasser, 2005). DHS’s main reason for this action was that FEMA had no law enforcement expertise that was necessary for pre-disaster operations (preparedness and mitigation) required for terrorism-related emergencies (Grunwald &
Glasser, 2005). As has been noted, however, prior to DHS, FEMA managed the whole gamut of disaster management, from mitigation to recovery (“U. S. Senate,” 2006). More important, a marginalized FEMA was unlikely to remain an effective agency because expecting FEMA to just look after response and recovery—divorced from preparedness or mitigation—went counter to the best disaster management practices (“U.S. Senate,” 2006; “U.S. House,” 2006).

Kathleen Tierney, the Director of the Natural Hazards Center at the University of Colorado, testified to Congress that DHS and FEMA’s poor response to Hurricane Katrina was attributable to DHS’s rejection in FEMA of the elements of “integrated emergency management” along with a failure to adhere to “All-Hazards Capabilities,” both of which likely arose from DHS’s zeal to prevent another terrorist attack like 9/11 (“U.S. Senate,” 2006, p. 221). What Tierney meant was that DHS leaned so heavily towards preventing terrorism that it failed to pay adequate attention to other disasters.

In early 2001, even before 9/11, a congressional commission tasked with examining the country’s security and disaster management apparatus recommended creating a “new homeland-security agency” to better integrate efforts to secure the country (“U.S. Senate,” 2006, p. 212). The commission’s report foresaw FEMA’s role as crucial in any such newly-created organization because of its long experience with disaster management (“U.S. Senate,” 2006). In reality, however, with 9/11 guiding their thinking, DHS officials quickly divested FEMA of many of its important functions and the corresponding funding, giving these responsibilities and resources to another organization within DHS that had law-enforcement capabilities (Grunwald & Glasser, 2005). Tom Ridge and Michael Chertoff, the first and the second Secretaries of DHS, removed from FEMA its preparedness
responsibilities and grants and transferred them to the Office of Domestic Preparedness (ODP), which was in the justice department before becoming part of DHS (Grunwald & Glasser, 2005; “U.S. House,” 2006). Thus these DHS officials broke FEMA’s cycle of “integrated emergency management,” having severed preparedness from its responsibilities (“U.S. Senate,” 2006, p. 221).

These changes occurred over months preceding Hurricane Katrina (Block, Schatz, Fields, & Cooper, 2005; Grunwald & Glasser, 2005). To DHS’s contention that preparedness after 9/11 had to have a predominant law enforcement component that FEMA lacked (Grunwald & Glasser, 2005), Brown and his supporters in FEMA responded that preparedness responsibilities were nonetheless crucial to FEMA because in the event of a disaster—natural or manmade—FEMA needed trained and equipped personnel on the ground who would quickly respond in seamless coordination with local officials (“U.S. House,” 2006). Indeed, even before Hurricane Katrina struck, emergency management experts agreed with Brown’s argument (Manjoo, 2005).

A month before Hurricane Katrina, in July 2005, a senior Alaska emergency official wrote to Michael Chertoff, the head of DHS, urging him not to further sever preparedness functions from FEMA because doing so would result in a “disjointed response” (Block, Schatz, Fields, & Cooper, 2005). After the disastrous federal response to Hurricane Katrina, “several witnesses . . . opined that splitting preparedness from response was a serious mistake” (“U.S. Senate,” 2006, p. 222). In addition, when Katrina struck, FEMA’s lack of preparedness, in terms of human and material resources, came to the fore (Grunwald & Glasser, 2005; “U.S. House,” 2006). These revelations lent support to Brown’s complaints. Brown told the House Select Committee that “these recent organizational changes have
divided what was intended to be one, all-hazards preparedness mission into two artificially separate preparedness categories of terrorism and natural disasters” (emphasis mine) (“U. S. House,” 2006, p. 155). The Senate Committee on Homeland Security and Governmental Affairs, too, concluded that separating preparedness functions from FEMA “eliminated FEMA’s role in preparing for disasters” (“U.S. Senate,” 2006, p. 222). Thus DHS appears to have legitimated (Giddens, 1984) its control of FEMA by adopting an ideology involving the category of “All-Hazards Capabilities” that considered emergency preparedness a terrorism-related issue.

Delegitimation / Unreification

In this section, I will explore how DHS and FEMA’s legitimated and reified category of “All-Hazards Capabilities” came to be delegitimated and un-reified through Brown’s kairotic agency (Herndl & Licona, 2007) with help from the category’s “unintended / perverse consequences” (Giddens, 1984, p. 294, p. 317). I will first explain the terms “unintended / perverse consequences” (Giddens, 1984, p. 294, p. 317) both generally and in relation to this category. Then, I will discuss Brown’s kairotic appropriation of the category.

As noted, Giddens’s (1984) concept of “unintended consequences” (p. 294) is based on Merton’s 1936 concept of “unanticipated consequences” (p. 894) of actions or discourses. Giddens (1984) has defined “unintended consequences” as follows: “The actors have reasons for what they do, and what they do has certain specifiable consequences which they do not intend” (p. 294). Actions inescapably have unintended consequences (Giddens, 1984). Some famous examples of actions having unintended consequences include prohibition in the 1920s, with an unintended consequence of rising organized crime (Thornton, 1991), and
beginnings of democracy in the former Soviet Union, which had an unintended consequence of the dissolution of Soviet Union (Brubaker, 1994). As also noted, “perverse consequences” are a class of unintended consequences that are “brought about in circumstances of structural contradiction” (p. 317). Communication scholars Fairhurst, Cooren, and Cahill (2002) give an example of perverse consequences of downsizing by a government contractor who had to achieve contradictory goals of laying off some employees while retaining enough employees to help shut down a production facility. The contractor’s downsizing plan was “oversubscribed” (p. 521), and consequently he ran the risk of not having enough employees to close the site. Subsequently, the contractor was forced to cancel layoffs for 200 employees, which prompted a series of changes in further downsizing attempts. Unintended consequences thus feed back into agents’ subsequent actions, reproducing the structure (Fairhurst, Cooren, & Cahill, 2002).

Explaining perverse consequences, Giddens (1984) stated, “These are outcomes not only that no one intends but also that run counter to what everyone in situation wants; none the less they derive from conduct that is intended to satisfy wants, and could do so for individuals, were it not for the fact that the conduct in question becomes generalized” (p. 311). “Perverse consequences” (Giddens, 1984, p. 317), then, are similar to unintended consequences that are blown out of all proportion, to use the phrase literally, not ironically. For example, as Chertoff stated after Hurricane Katrina, neither DHS nor FEMA would have failed in its response if the hurricane were not as destructive as Katrina was (“Statement by Homeland Security,” October 19, 2005). Chertoff categorically stated that “for the vast majority of natural disasters, FEMA’s current capabilities [were] sufficient” (“Statement by
Homeland Security,” October 19, 2005). However, perversely enough, what DHS, armed with its interpretation of the category of “All-Hazards Capabilities,” found itself having to respond to was a hurricane of the magnitude of Katrina. To put this point more directly, DHS was prepared, according to Chertoff, for individual hurricanes of normal proportions. However, it was not prepared to deal with something as catastrophic (“generalized”) as Katrina. To better understand how DHS and FEMA’s having to respond to Hurricane Katrina was an unintended / perverse consequence of the category of “All-Hazards Capabilities,” we need to briefly revisit DHS’s mission.

Formed after the worst terrorist attacks anywhere, DHS did not expect to spectacularly fail in disaster management, a task that was (is) DHS’s raison d’etre. DHS’s confidence was not unfounded because the organization was (and is) enormously powerful with capabilities in a myriad areas of emergency management. Moreover, the organization was (is) equipped and funded by the most powerful nation in the world. In fact, at the time of Hurricane Katrina, DHS had managed to oversee national security without any significant terrorist incident since 9/11, a remarkable feat by itself. Had there been another terrorist attack, DHS’s legitimation of this category would probably have been seen as a right thing to do. However, having to deal with the biggest natural disaster in US history (Hurricane Katrina) when this category was lopsided in its focus on terrorism—thanks to DHS’s policies—was an “unintended / perverse consequence” (Giddens, 1984, p. 294, p. 317) of this legitimated category for both DHS and FEMA (because FEMA had to go along with DHS’s interpretation). Besides, although FEMA’s Brown feared of a possibility of a catastrophic disaster (Grunwald & Glasser, 2005), he and FEMA could hardly have anticipated, much less
desired, being handed a test case in Hurricane Katrina of the better wisdom of their own interpretation of this category.

Moreover, perverse consequences “have a . . . boomerang effect they express” (Giddens, 1993, p.140). In what might be seen as a “boomerang effect” of this category, DHS found itself having trained for a wrong mission, as it were—for it had prepared for a possible terrorist attack—and having to respond to instead, as Chertoff put it, “the 100 year storm that we all feared” (but did not expect, as seen from the response) (“Statement by Homeland Security,” February 15, 2006). Unintended / perverse consequences of this category created a kairotic opportunity for Brown to assert his agency.

Although the category of “All-Hazards Capabilities” was “predominantly constraining” (Orlikowski, 1995, p. 76) for FEMA and enabling for DHS prior to Hurricane Katrina (a structural contradiction), the category was used by Brown in a strongly enabling manner in his memo. By framing his request for DHS personnel as adding to the organization’s overall “All-Hazards Capabilities,” Brown turned a category that had thus far constrained FEMA into one that helped him to align his interpretation of the category (all hazards means all disasters) temporarily with that of DHS, who could hardly object to Brown’s interpretation in light of a category 3 hurricane.

This recontextualization of the category by Brown seems unlikely to have been coincidental. A more likely explanation is that Brown seized the crisis-ridden moment (Herndl & Licona, 2007) of an impending disaster to make his request for DHS’s assistance by driving home his long-standing conviction that “All-Hazards” should really mean all hazards. This inference does not seem far-fetched when we consider that Brown had expressed his fears, long before Hurricane Katrina struck, that FEMA would not be able to
successfully respond to a catastrophic disaster because of its marginalization (Grunwald & Glasser, 2005).

In a way, the disaster proved Brown’s point that natural disasters could not be taken any less seriously than terrorist incidents. Through Brown’s *kairotic* use of the category of “All-Hazards Capabilities” based on its “unintended / perverse consequences” (Giddens, 1984, p. 294, p. 317), the category stood exposed for what it really was, overly focused on terrorism to the point of neglecting threats from other major disasters (“U.S. House,” 2006). This reversal in the category’s power suggests something like un-reification or delegitimation of this category. This inference is strengthened by the fact that a day after Brown wrote to him, Chertoff appointed Brown as the organizations’ point man or the Principal Federal Official (PFO) to spearhead the federal response to Hurricane Katrina. Thus, although the category was used by DHS to marginalize FEMA, the unintended / perverse consequences of the category acted upon by Brown not only enabled him to receive DHS personnel and resources but may also have influenced Chertoff to appoint him a PFO. Thus, adding to Orlikowski’s (1995) description of legitimated categories, I submit that categories mostly constraining for some agents in some contexts may turn mostly enabling for them in other contexts and vice versa.

Seen in terms of Giddens’ (1984) “legitimation” (p.33), Brown’s *kairotic* use of the category of “All-Hazards Capabilities,” along with his appointment as the PFO, combined to create a condition in which this category appeared to have been de-legitimated, at least temporarily. This interpretation is plausible because the category was no longer solely and ideologically used by DHS to constrain and dominate FEMA but was co-opted by Brown to make a substantial argument for empowerment. This aspect of “legitimation,” its seeming
reversal, even if temporary, enhances our understanding of the term by lending credence to
the structuration argument that all agents, no matter how constrained, possess power, as
Herndl and Licona (2007) have posited. More important, this instance points out that
legitimating categories can on occasions come to be delegitimated.

There may be some evidence to argue that delegitimation of the category of “All-
Hazards Capabilities” may have extended beyond Brown and FEMA’s temporary
empowerment. This evidence is in the form of a slight, seemingly significant, change in the
definition of this category in the newly-drafted National Response Framework (NRF), which
replaced NRP in 2008 (www.dhs.gov). While the NRP—which undergirded DHS’s and
FEMA’s response to Hurricane Katrina—defined this category as including “terrorism,
natural disasters, accidents, and other contingencies,” the definition of the category in NRF
puts natural disasters ahead of terrorism in terms of the word order. That is, NRF defines
“all-hazard events” as including “accidents and natural disasters to actual or potential
Although this slight change in the word order in a definition may be coincidental or an
insignificant detail, the change is important given DHS’s previous preoccupation with and
ideological framing of this category as focused on terrorism-related threats. In other words,
this change may subtly reflect a rearrangement in organizational priorities or delegitimation
of pre-Katrina discourses. While I acknowledge that this inference is at best thin and
speculative, it does give one a pause given DHS and FEMA’s legacy. Thus, Giddens’s
(1984) concepts of unintended / perverse consequences, along with a kairotic conception of
agency (Herndl & Licona, 2007), helps us to understand a reversal of effects of a powerful,
legitimating DHS category used to dominate FEMA.
The second memo (Figure 2) I analyze is by Michael Chertoff, Secretary, DHS. This memo by Chertoff is dated August 30th and appears to have been in response to Brown’s memo of a day earlier. By the time of this memo, two days had passed since the hurricane made its landfall, and some of its worst consequences were beginning to emerge (“White House,” 2006). However, the country had yet to assess the full consequences of the disaster, not to mention the federal government’s response to it (“White House,” 2006).

I include only select paragraphs from the memo, leaving out a paragraph giving the job description of the PFO and the closing paragraph where mere contact information is given. Also not shown in Figure 2 is DHS’s letterhead on which the actual memo is printed.

August 30, 2005

MEMORANDUM FOR DISTRIBUTION

FROM: Michael Chertoff

SUBJECT: Designation of Principal Federal Official for Hurricane Katrina

As you know, the President has established the “White House Task Force on Hurricane Katrina Response.” He will meet with us tomorrow to launch this effort. The Department of Homeland Security, along with other departments, will be part of the task force and will assist the Administration with its response to Hurricane Katrina.

In accordance with the guidance provided in the National Response Plan (NRP), I hereby declare Hurricane Katrina an Incident of National Significance and designate Michael Brown, Under Secretary for Emergency Preparedness and Response (EP&R), as the Principal Federal Official (PFO) for incident management purposes during the response and recovery operations for Hurricane Katrina.

The PFO does not impede nor impact the authorities of other Federal officials to coordinate directly with their department or agency chain of command or to execute their duties and responsibilities under law.
I am confident that Under Secretary Brown will provide the leadership necessary to ensure an effective and efficient incident response. I request that you provide him your fullest measure of support in the execution of these important responsibilities.

Figure 2: Chertoff’s Memo

As with my analysis of Brown’s memo, I first take up categorization and domination. Apart from an institutional category, I examine the category system of the National Response Plan (NRP). Then, I analyze the memo for issues related to ideology, reification, and legitimation. Finally, I discuss de-legitimation or un-reification of NRP, an important DHS category system dominating FEMA.

**Categorization and domination**

- **The category of the “White House Task Force” for response to Katrina**

  Despite being the leader of the highest homeland security organization, Chertoff begins the memo with a category of the “White House Task Force,” of which DHS will be a part, to respond to Hurricane Katrina. His use of the category conveys framing (and thus limiting or constraining) of DHS’s role in the overall national effort to respond to the hurricane. At the same time, by starting the memo with a mention of the president and the White House Task Force, Chertoff gains power and enablement by locating himself and his department (DHS) next to the highest office in the country. Thus this category simultaneously constrained and enabled Chertoff (Orlikowski, 1995).

- **The NRP Category System**

  Developed by DHS, the National Response Plan (NRP) was a comprehensive security management document at the root of DHS (“U.S. Senate,” 2006; “White House,” 2006). A DHS brochure defines NRP as follows: “an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents. It provides the
structure and mechanisms for the coordination of Federal support to State, local, and tribal incident managers and for exercising direct Federal authorities and responsibilities.” NRP was, in Orlikowski’s (1995) terms, a category system, which contained numerous categories, signs, and scripts guiding DHS and its subordinate organizations.

Chertoff’s reference to NRP frames and guides (and therefore limits with various provisions and directives and conditions) his declaration of the hurricane as an Incident of National Significance (INS) and his designation of Brown as the Principal Federal Official (PFO) for the federal response to the hurricane. Some of these limitations of the framework of NRP stood in the way of an effective federal response to Katrina, as I will show next. Yet Chertoff simultaneously gains power by referring to the NRP—which is a national security framework (“U.S. Department of Homeland Security,” 2004)—as the basis for his actions [“In accordance with the guidance provided in the National Response Plan (NRP) . . .”]. Thus the category system of NRP simultaneously constrained and enabled Chertoff (Orlikowski, 1995). Moreover, the category system had important implications for issues of power and agency in DHS and FEMA.

Ideology, Reification, and Legitimation

The category system of NRP functioned as an ideological and reified tool of DHS, allowing it to dominate FEMA. DHS’s reified category of “All Hazards Capabilities” belonged to the NRP. The category system appeared to have been reified because many of its categories seemed to have been invoked mainly because they belonged to NRP. In reality, many were laden with problems (“U.S. House,” 2006).

Chertoff mentions NRP in the first sentence of the second paragraph to designate Brown as a PFO and Hurricane Katrina as an INS. In the same paragraph, he mentions
FEMA by its new name, Emergency Preparedness and Response (EP & R). Perhaps the most
telling example of Chertoff’s use of NRP as an ideological tool to dominate FEMA is his not
mentioning the name FEMA in his memo. Instead, Chertoff refers to FEMA by its new name
under DHS and NRP: EP & R. Chertoff’s not using the name FEMA even as a parenthetical
reference is interesting given that only a day ago Michael Brown sent Chertoff a memo on
FEMA’s letterhead and with one explicit mention of FEMA in the body of the memo.
Indeed, in the months preceding Hurricane Katrina, many in DHS “no longer considered
[FEMA] an agency worth expanding” (Grunwald & Glasser, 2005, p.5). This reaction was
directly related to Brown and FEMA’s conflict with DHS over organizations’ mission and
priorities (“Grunwald & Glasser, 2005).

An instance of NRP as a reified category system can be seen in the category of PFO.
Chertoff names FEMA’s Brown as a PFO. But he carefully delimits PFO’s boundaries, albeit
based on the NRP guidelines (“U.S. House,” 2006): “The PFO serves as my representative
locally . . .”; “The PFO does not impede nor impact the authorities of other Federal officials. .
. .” This delimiting was part of the confusion regarding the category of PFO (“U.S. House,”
2006). In reality, PFO’s authority over other DHS organizations, which would be crucial
when a disaster struck, was severely constrained (“U.S. House,” 2006). Moreover, the legal
authority for most emergency responses lay with the president, and, through the president,
with another job category under NRP called the Federal Coordinating Officer (FCO) (“U.S.
House,” 2006). The position of FCO thus made the PFO’s job somewhat irrelevant (“U.S.
House,” 2006). In addition, PFO was just one of many officials and/or categories involved in
network (categories) of positions and departments to manage response operations, which failed to work together effectively in response to Katrina (‘U.S. House,’ 2006).

Another reified NRP category was INS or the “Incident of National Significance.” This category, which Chertoff mentions in his memo, also proved problematic in its implementation (‘White House,’ 2006). According to Senator Collins, the chairman of the U.S. Senate Committee on Homeland Security and Governmental Affairs, the declaration was unnecessary because the president’s declaration of emergency in Louisiana (on August 27) had already made Katrina an INS (“Senate Committee,” 2006). More important, Chertoff’s late declaration, when an INS already existed, delayed federal response (“Senate Committee,” 2006). The White House’s review stated that many aspects of NRP were unclear when Katrina struck (“White House,” 2006). Thus, NRP, which seems to be have been a reified and an ideological tool within DHS, proved inadequate to deal with Katrina (“White House,” 2006; “U.S. House,” 2006).

Delegitimation / Unreification

In this section, I add to Orlikowski’s (1995) point about legitimated categories that are “predominantly” (p. 76) constraining to some actors while being mostly enabling to other actors. My contention is that legitimated categories can come to be delegitimated because of a changed context. The delegitimation occurs because of agents’ kairotic uses of their agency (Herndl & Licona, 2007) with the help of “unintended / perverse consequences” (Giddens, 1984, p. 294, p. 317), as we saw with the category of “All-Hazards Capabilities.” However, de-legitimation can also occur with the help of “unintended consequences” (Giddens, 1984, p. 294) themselves, in a manner of speaking, with agents evaluating and making sense of the
changed context through what Giddens (1979) has called “discursive penetration” (p. 208) or an awareness of the changed conditions of discourse, as in a post-mortem (Fairhurst, Cooren, & Cahill, 2002, p. 532). Unintended consequences may themselves become a dominant factor in delegitimation when their influence is too overwhelming for individual agents’ kairotic agency, as I will show.

The category system of NRP proved “predominantly” (Orlikowski, 1995, p. 76) constraining for DHS when Hurricane Katrina struck, even though it had enabled DHS to legitimate its control of FEMA by rechristening, reorganizing, and redefining it. The category system constrained DHS because NRP’s key category of “All-Hazards Capabilities” came to be delegitimated. Moreover, the category system constrained DHS because of a lack of clarity regarding key categories, such as INS. Finally, the category system became a coordination nightmare once the hurricane struck (“U.S. House,” 2006). Several of the congressional investigations into the federal government’s botched response to Hurricane Katrina blamed the NRP for failing DHS and FEMA (“U.S. House,” 2006; “White House,” 2006). Michael Chertoff, the head of DHS at the time of Hurricane Katrina, acknowledged that “there were shortcomings [in the NRP]” (“Statement by Homeland Security,” October 19, 2005). The category system of NRP thus came to be de-legitimated, as its problems were exposed and it no longer enjoyed its once reified status. This happened because of a change in the context in which NRP’s role in the response to Hurricane Katrina and its control over FEMA were questioned and criticized. In other words, NRP, in its given form, was no longer considered a legitimate way of operating, including by those who ran DHS, as seen in Chertoff’s remark.
This aspect of the NRP, what I call its delegitimation, enhances our understanding of Giddens’ (1984) structural dimension of “legitimation” (p. 33) because it shows us that even legitimated categories are no exception when it comes to the process of structuration. Herndl & Licona (2007) have argued that a kairotic conception of agency can indeed mitigate effects of reification. However, in NRP’s case, we saw what appears to be un-reification or delegitimation of this category.

The reversal in fortunes of this category-system is perhaps best explained by Giddens’s (1984) term “unintended consequences” (p. 294). Through NRP, DHS intended to build a security apparatus that not only integrated different functions and agencies but also helped combat all types of hazards (based on the category of All-Hazards Capabilities). In reality, many of these categories could not deal effectively with the disaster of the magnitude of Hurricane Katrina, a failure that was an “unintended consequence” (Giddens, 1984, p. 294) of these categories. DHS did not anticipate many of its carefully designed categories in the NRP, including INS, to create confusion instead of clarity and smooth coordination when having to deal with a disaster of the magnitude of Hurricane Katrina was hard enough. DHS’s extreme focus on terror-related threats, channeled through the NRP category of “All-Hazards Capabilities,” was also an unintended consequence of the category system of NRP. Thus, unintended consequences of its categories in the changed context of the disaster of the magnitude of Hurricane Katrina exposed many flaws in NRP and reduced its stature from being a reified, Egyptian-god like figure to that of a collection of many fallible and problematic categories (hence delegitimated).

However, unlike Brown’s kairotic delegitimation based on unintended / perverse consequences of the category of “All-Hazards Capabilities,” delegitimation of NRP cannot
be easily related to an individual agent’s actions. What happened was that several aspects of the category-system failed to respond the way they were expected to. These unintended consequences were analyzed by numerous government functionaries, including officials from both DHS and FEMA and policy-makers or politicians overseeing them all, in post-disaster investigations. As these multiple agents deliberated changed conditions on account of the consequences of NRP in responding to Hurricane Katrina, these agents collectively helped bring about delegitimation of this powerful category-system. Giddens (1979) has termed this process “discursive penetration” (p. 208) or an awareness of consequences of discourses (Fairhurst, Cooren, and Cahill, 2002). In 2008, NRP was scrapped in favor of a new, revised category-system governing DHS and its subordinate organizations. This category-system is called the National Response Framework (NRF).

**Conclusion**

Structuration theory allows us to see categories as simultaneously constraining and enabling (Orlikowski, 1995). In this article, adding to Orlikowski’s (1995) argument that reified categories can be mostly constraining for some agents while being mostly enabling for some other agents, I have pointed out, based on my analysis of the categories of DHS and FEMA at the time of their response to Hurricane Katrina, that categories that mostly constrain some agents in some contexts can in other contexts mostly enable them and vice versa. In other words, my analysis suggests that legitimated and reified discourses, which empower actors who own and propagate these discourses, can in some situations come undone and robbed of inordinate power they possess.

Given this insight, it may be instructive to take a detour to survey developments in DHS and FEMA after the reversal of the two legitimated categories (“All-Hazard
Capabilities” and the NRP). Such a review may help us better “see” the reversal of legitimated categories that I have argued here. In a speech at a 2006 National Hurricane Conference, DHS secretary Michael Chertoff asserted that DHS’s “goal [was] to make FEMA stronger and provide FEMA with the 21st century tools and resources” (“Remarks as Prepared,” April 12, 2006). He also informed his audience that the president had approved a budget increase for FEMA (“Remarks as Prepared,” April 12, 2006). In a statement to the US House Select Committee on Hurricane Katrina, Chertoff accepted that Hurricane Katrina was “the first large-scale test” for the NRP and that its “shortcomings” had come to light (“Statement by Homeland Security,” October 19, 2005). He also acknowledged that “FEMA must be better prepared to deal with all stages of a truly catastrophic event like Katrina,” thus echoing Brown’s focus on preparedness and all hazards (“Statement by Homeland Security,” October 19, 2005). Thus, although Brown was asked to resign following poor federal response to Hurricane Katrina, his kairotic agency during the hurricane response, along with unintended / perverse consequences of some organizational categories in DHS and FEMA having to deal with Hurricane Katrina, produced a serious rethink over categories such as “All-Hazards Capabilities” and NRP. Before elaborating further, a brief note may be in order regarding Brown’s firing. His firing perhaps indicates that agents’ kairotic exploitation of unintended consequences of discourses do not preclude personal risks, even as they allow greater power to these agents along with possibilities of overturning legitimated discourses or categories. It is also important to remember that, although no longer part of DHS, Brown continued to wield his power as he testified before congressional investigations, which contributed to the discursive penetration of the changed conditions.
The inference that the two categories came to be delegitimated is lent credence by Chertoff’s remarks about strengthening FEMA so as to deal with all catastrophic disasters in all areas of emergency management. Furthermore, in 2008, NRP was replaced by the National Response Framework (NRF). A FEMA brochure’s comments on the history of the framework are noteworthy: “In recent years, our Nation has faced an unprecedented series of disasters and emergencies, and as a result our national response structures have evolved and improved to meet these threats. The National Response Framework reflects those improvements and replaces the former National Response Plan (NRP).” The comments remind one of the legacy and delegitimation of NRP that I have argued.

The insight that categories used for legitimation and reification can also, in some other contexts, be delegitimated or un-reified, based on *kairotic* agency and unintended consequences, makes us see Giddens’ (1984) “legitimation” (p. 33) in a slightly different light. This insight lends credence to the structuration process, in that it shows that context (*kairos*) plays an important role in structuration, that structure may undergo significant changes based on its unintended consequences and through agents’ *kairotic* actions, and that agency and power are available to all in organizations (Barley & Tolbert, 1997; Orlikowski, 1992; Herndl & Licona, 2007; Fairhurst, Cooren, & Cahill, 2002). My analysis suggests that even legitimated categories can end up strongly empowering agents formerly constrained by them. Merton’s (1936) factor of “fundamental values” (p. 903) or ideological predisposition influencing actions’ unanticipated consequences hints at this reversal. He seems to imply un-reification or delegitimation of discourses or categories when he states: “Here is the essential paradox of social action—the ‘realization’ of values [unintended consequences of legitimated discourses] may lead to their renunciation” [delegitimation] (p. 903).
What might be said of the structuration processes of unintended consequences and kairotic agency behind such reversals of “legitimation” (Giddens, 1984, p. 33)? In the case of delegitimation of the category of “All-Hazards Capabilities,” the take away seems to be that it takes a rhetor’s skill to take advantage of unintended consequences of categories, given a new context. De-legitimation of the category-system of NRP suggests the importance of unintended consequences of categories themselves. These consequences, as in the case of NRP, may be a result of multiple actors’ multiple uses of multiple categories—often working in an interrelated fashion and in the face of new contexts—producing unanticipated outcomes. These consequences may or may not be acted on by agents in kairotic moments (Herndl & Licona, 2007), but they feed back into the structuration process, as Giddens (1984) and other scholars (Fairhurst, Cooren, & Cahill, 2002; Bryant & Jary, 2001) following structuration theory suggest. In fact, “discursive penetration” (Giddens, 1979, p. 208) of unintended consequences is one of the strengths of the explanatory power of structuration theory (Bryant & Jary, 2001). Structuration theory, then, helps explain categories in organizations more extensively than Orlikowski (1995) has posited.

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Appendix: Methods

This article is based on two memos of DHS and FEMA connected with their response to Hurricane Katrina. Combining convenience and purposive (opportunistic) sampling (Russell & Gregory, 2003), I selected these two memos for both simple and strategic reasons. At the outset, they were the only two memos connected with DHS and FEMA’s hurricane response that were available on the Web. From the standpoint of my analysis, however, these memos were written by the heads of FEMA and DHS and thus seemed promising with regard to insights into issues of agency, power, and ideology in the organizations, aspects with which categories are intimately connected (Orlikowski, 1995). Furthermore, both memos were written in response to Hurricane Katrina, thus providing a common—hence comparable—context for my analysis.

To supplement my rhetorical analysis of the memos, I use contextual information from various secondary sources connected with the federal response to Hurricane Katrina. These sources include reports by various congressional investigations and a white house review into the federal response to Hurricane Katrina; media articles on the federal hurricane response published online; the National Response Plan (NRP) and the National Response Framework (NRF); and the Web sites of DHS and FEMA.

My textual analysis of the memos is based on structuration theory and combines analysis of both textual and contextual features (Lay, 1995; David & Baker, 1994). Thus my analytical approach nods to Lay’s (1995) assertion that rhetorical analysis involves “finding [of] means of persuasion” by organizational actors “given one’s audience, purpose, and context” (p. 298). Furthermore, I approach my analysis with the theoretical framework of
Giddens’s structuration theory, to better understand interplay and interaction of organizational structure and agents.

I first identified from the memos a category or a pair of categories that appeared to work together strategically. Then, I analyzed the category or categories for how they constrained (or framed) the memo writer’s actions, yet at the same time enabling him or allowing him to use power (domination). I support my analysis of the categories with contextual information. In the second part, I identified from the memos, and the surrounding contextual information, categories that appeared ideologically oriented and reified. Finally, in the third part of my analysis, I discussed delegitimation of these categories based on textual as well as contextual features. I want to make a brief mention of this study’s main limitation.

This paper is a small, preliminary attempt to use structuration theory to understand the relationship between categories, agency, and power in organizations. Its main limitation is its use of only secondary data for analysis. Interviews with the writers of the memos, or with other DHS and FEMA actors involved in Hurricane Katrina response operations, would have lent the study more depth and credibility. Although I have supported my analysis with what I believe to be adequate contextual evidence, I believe my inferences in this article to be suggestive and speculative. In the end, this paper joins scholars such as Herndl & Taylor (1993) and Suchan (2006) in urging more use of structuration theory in rhetoric and professional communication.
Chapter 3. Changing Rhetorical *Topoi* for Boundary-Work between Evolution and Its Opponents: From Popper’s Falsification Theory to Methodological Naturalism

A paper to be submitted to *Technical Communication Quarterly*

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In fall 2005, Iowa State University, a Carnegie “very high research activity” institution, witnessed a debate between proponents of researching and/or teaching Intelligent Design (ID) and those of teaching only evolution, whom I will call opponents and proponents of evolution, respectively. The main players in the debate, which went on largely in the Faculty Senate and the local press, were Guillermo Gonzalez, an assistant professor of astronomy and a supporter of ID, and Hector Avalos, an associate professor of religious studies and a self-professed atheist. Gonzalez’s book supporting ID—titled *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery*— sparked the debate after it was published in 2004. Shortly after a film based on the book was shown at the Smithsonian, Washington, D. C. in the summer of 2005, Avalos led more than 120 of Iowa State’s faculty members in issuing a statement rejecting ID as science (Appendix A).

Subsequently, the Iowa State president Gregory L Geoffroy asked the Faculty Senate to discuss ID. The senate recommended leaving the decision of whether or how to include ID in departmental curricula to individual departments following the procedure for proposal and approval of courses. A course critiquing ID was offered at Iowa State in the following semester. In 2007, Gonzalez’s tenure was denied (Iowa State officials insisted that the debate had nothing to do with it) (“Guillermo”). A year later, he left Iowa State, having lost his
appeal (“Guillermo”). The debate at Iowa State offers a recent case study of the fundamentally rhetorical conflict between evolution and its opponents (creationism/ID) that has important consequences for our conception of scientific knowledge. In this article, I analyze the debate at Iowa State as part of the last three decades of rhetorical contestation between evolution and its opponents. My analysis illustrates how science is an institutional, academic, and a political category (Kinsella, 2005; Shapin, 1992; Rouse, 1996).

Contests over epistemic and social authority between evolution and its opponents (creationism and ID) have been termed “boundary-work” (Gieryn, 1983, 1999, 2008) or “demarcation” (Prelli, 1989; Taylor, 1996) disputes between “science” and “non-science” (or “pseudoscience”). These disputes have both epistemic and social aspects because they combine rhetorical conception of science with public’s acceptance of its authority (Gieryn, 1983). Gieryn (1983, 2008) has defined “boundary-work” as a special characterization of scientific practices, knowledge, “methods,” “values,” and the like, by scientists and their allies to protect the “intellectual authority” and resources of science from claims not deserving of its name (pp. 782-783). However, Taylor (1996) has argued that boundary-work does not simply comprise clear-cut, ready-to-use, ahistorical strategies that scientists and their allies use to protect professional turf and resources of science. Rather, boundary-work consists of contextual and “rhetorically and historically adaptive” processes involving both collaborating and competing stakeholders in a given dispute’s “scientific ecosystem,” a collection of stakeholders in a given dispute (Taylor, 1996, pp. 10-15, p. 92). In other words, according to Taylor (1996), boundary-work is local and episodic; it involves not just
scientists and their allies but also their competitors; and it responds to previous episodes of and challenges to boundary-work.

Boundary-work disputes have been studied by scholars of rhetoric, sociology, and history of science, among others (Gieryn, Bevins, & Zehr, 1985; Taylor & Condit, 1988; Lessl, 1988; Prelli, 1989; Taylor, 1996; Weaver, 1997; Ervin, 1999; Campbell, 2003; Condit, 2003; Numbers, 2006; Gieryn, 2008). Previous studies have examined boundary-work between evolution and creationism (Lessl, 1988; Prelli, 1989; Taylor, 1996) or between evolution and ID (Numbers, 2006; Katskee, 2006). A few studies have discussed boundary-work in both kinds of disputes (Numbers, 2006). However, as Taylor (1996), Ruse (2001), and Numbers (2006) have pointed out, although disputes between evolution and its opponents have witnessed changes in terms of contestants, boundary-work strategies, and scientific ecosystems, few studies have explicated what Taylor (1996) has called “rhetorically and historically adaptive” (p. 92) reasons for changes in boundary-work in these disputes. A notable exception has been Taylor’s (1996) study discussing rhetorically and historically adaptive reasons for changing boundary-work between the dispute of evolution and Biblical creationism and that of evolution and scientific creationism. In this article, I extend Taylor’s (1996) investigation by analyzing rhetorically and historically adaptive reasons for changing rhetorical topoi* in boundary-work between disputes of evolution and scientific creationism and those of evolution and ID. A historical exploration of rhetorical topoi in boundary-work provides a more intricate understanding of their workings.

*Following the example of Prelli (1989), I use this Aristotelian term as a convenient rhetorical term to denote bases for argumentation in boundary-work.
I specifically argue that the main rhetorical *topos* for boundary-work between evolution and its opponents—scientific creationism and ID—has changed over the years from Popper’s falsification theory to methodological naturalism—a tacit assumption among scientists and scholars of science that science is restricted to natural, as opposed to supernatural, explanations (Forrest, 2000). I further argue that methodological naturalism came to be perceived by proponents of evolution as a stronger rhetorical *topos* for boundary-work against evolution’s opponents.

The concept of methodological naturalism lay at the center of the debate at Iowa State. Methodological naturalism figured prominently in Avalos’s statement rejecting ID as science (Appendix A), as well as the course on ID recommended by the faculty senate; it also seems to have had an indirect influence over Gonzalez’s tenure decision.

My analysis draws on a sizeable multidisciplinary literature on boundary-work disputes and my own qualitative research study of the debate at Iowa State (see methods, Appendix B). Before I delve into my analysis of the changing main rhetorical *topos* between the disputes of scientific creationism and those of ID, I provide a brief background of rhetorical *topoi* in boundary-work disputes.

**Rhetorical Topoi in Boundary-Work between Evolution and Its Opponents**

Although proponents of evolution have used a range of rhetorical *topoi* for boundary-work against scientific creationism and ID, there are two main ones: 1) Popper’s falsification theory and 2) “natural law” or methodological naturalism (Lessl, 1988; Taylor, 1996; Numbers, 2006). Popper’s falsification theory posits that a scientific theory must predict
conditions under which it may be refuted or falsified (Popper, 1974). In other words, according to falsification theory, a theory must be falsifiable or testable to be considered scientific (Popper, 1974). Based on the rhetorical topos of falsification theory, proponents of evolution declared that scientific creationism and ID are either unfalsifiable or have been falsified; therefore, they are not a science (Numbers, 2006). However, opponents of evolution used the theory to claim that evolution too was unfalsifiable (Taylor, 1996).

The other main rhetorical topos used by proponents of evolution in their boundary-work against scientific creationism and ID is “natural law” (Nelkin, 1982, p. 144; Prelli, 1989, p. 229) or the “scientific method” (Shermer, 1991, p. 529)—references to what in later disputes will be called methodological naturalism. Methodological naturalism is a basic premise limiting scientific inquiry to the confines of the natural world—that is, one that is “constituted by its empirical accessibility”—or to natural causes and explanations for phenomena (Forrest, 2000, pp. 18-19). Although methodological naturalism seems identical to falsifiability since both require empirical evidence, the two concepts are often seen differently by proponents and opponents of evolution. Specifically, falsifiability has been taken to mean as simply a requirement to stipulate conditions under which a given claim—even one based in supernaturalism—can potentially be falsified (Sober, 2007). Based on this interpretation, creationists have successfully shown their claims as falsifiable (Sober, 2007). Methodological naturalism on the other hand is seen by proponents of evolution as a precondition for doing science. However, opponents of evolution do not consider methodological naturalism as an essential premise for doing science (Numbers, 2006). Both in disputes involving scientific creationism and in those involving ID, proponents of
evolution argued based on “natural law”—or methodological naturalism—that scientific creationism or ID posits a creator or a designer for whom no evidence can be found in the natural world. Hence, they asserted that these viewpoints cannot be considered a science. Opponents of evolution reject this reasoning, as pointed out.

There are other, supplementary topoi for boundary-work by proponents of evolution against scientific creationism or ID. These topoi include qualities attributed to science or scientists, such as experimentation, scientific expertise, peer-review, and so on, by sociologists, philosophers, or other scholars of science (Gieryn, Bevins, & Zehr, 1985; Lessl, 1988; Jones II, 2009). Included among these qualities are also the so-called norms of “scientific ethos” given by the sociologist of science Robert Merton, such as “communality” [or, roughly, subjecting one’s research to peer critique and review], ‘skepticism,’ ‘universality’ [or acceptance of beliefs having a universal scientific consensus], and ‘disinterestedness’” (Prelli, 1989, p. 222). These supplementary topoi have collectively helped proponents of evolution build their case against evolution’s opponents in boundary-work disputes (Taylor, 1996; Numbers, 2006; Jones II, 2009).

The Changing Main Rhetorical Topos: From Falsification to Methodological Naturalism

The main rhetorical topos for boundary-work appears to have changed over the last three decades or so from Popper’s falsification theory during a 1981 Arkansas trial between evolution and scientific creationism (Lessl, 1988; Taylor, 1996) to methodological naturalism during the 2005 debate at Iowa State between evolution and ID. I will trace that development through six stages, in order to suggest rhetorically and historically adaptive reasons for it. A
historical exploration of these rhetorical topoi will help us better understand their nature and role in boundary-work. In turn, such an exploration will also enlighten us about the nature and purposes of boundary-work itself.

i. **The 1981 Arkansas Evolution-Scientific Creationism Trial**

The first major battle between evolution and its opponents since the famous Scopes trial in the 1920s began when Arkansas passed a law mandating “balanced treatment” (Numbers, 2006, p. 272) for scientific creationism and evolution in the state’s public schools (Gieryn, Bevins, & Zehr, 1985). Arguing that the law violated the First Amendment separating religion and state, the American Civil Liberties Union (ACLU) challenged it in court (Nelkin, 1982). The trial generated national publicity and interest, with journalists, members of clergy, supporters of scientific creationism, teachers, among others, gathering at the federal district court in Little Rock, Arkansas, where the trial was being held (Nelkin, 1982). In his verdict, the judge William Overton struck down the law as unconstitutional and declared scientific creationism to be an unscientific and a religious argument (Gieryn, Bevins, & Zehr, 1985).

During the trial, proponents of evolution (mainly scientists) invoked Popper’s theory of falsification as their main rhetorical *topos* for boundary-work (Lessl, 1988; Taylor, 1996) (although the judge in his ruling also relied on methodological naturalism, as we will see) (Ruse, 2001, p. 366). However, creation scientists also used Popper’s theory of falsification to attack the scientists defending evolution (Lessl, 1988; Taylor, 1996). The scientists defending evolution argued that since scientific creationism was neither testable nor falsifiable, it was not a science. To support their claim, they pointed out the “virtual absence
of any experimental or observational work by creation scientists” and their refusal to allow their views to be tested through falsification (Ruse, 1982, p. 43). However, in their counter-attack (or reverse boundary-work), the creation scientists quoted Popper himself, who had described evolution as a “metaphysical research program” because it was untestable and unfalsifiable (Popper, 1986, pp. 167-171; Lessl, 1988, p. 26; also see Taylor, 1996) (a claim on which philosophers of science disagree, however; see Ruse, 2009). Quoting Popper, the creation scientists argued that since evolution was a “metaphysical research program” (Lessl, 1988, p. 26), it did not merit any precedence over scientific creationism, which was a “teleological” viewpoint grounded in science (Taylor, 1996, p. 149). They then argued that since both evolution and scientific creationism were “unfalsifiable,” scientific creationism deserved an equal treatment in public schools’ science curricula alongside evolution (Taylor, 1996; Numbers, 2006).

However, proponents of evolution rejected the creation scientists’ claims, and Popper qualified his earlier statement about evolution’s lack of falsifiability. Popper clarified that evolution’s claim that “all terrestrial life evolved from a few primitive . . . organisms” was “well tested,” but that Darwin’s theory of natural selection was not (Popper, 1987, p. 143). But the creation scientists stuck to their contention that evolution was not a science because it was not falsifiable (Lessl, 1988; Taylor, 1996; Numbers, 2006).

Popper’s qualified defence of evolution (Numbers, 2006) and the creation scientists’ selective appropriation of his views posed a rhetorical challenge for proponents of evolution. Creation scientists appeared to be making their case based on an authoritative theory in philosophy of science: Popper’s falsification theory. This challenge meant that there was a
possibility of sowing further doubts regarding evolution in the minds of laypersons, who might find it difficult to sift through scientific jargon to judge for themselves whose claim—evolution’s or scientific creationism’s—was more meritorious or whether both claims had equal validity, thus warranting an equal treatment (which of course was the creation scientists’ goal during the trial). Thus, during the Arkansas’ evolution-scientific creationism trial, the use of Popper’s falsification theory as a rhetorical *topos* for boundary-work appeared to place the burden of proof with proponents of evolution themselves. They were expected to explain why creation science should not be treated equally with evolution even though both theories supposedly failed to meet the criterion of falsifiability given by Popper, his later clarification notwithstanding.

Additionally, as the main rhetorical *topos* for boundary-work, Popper’s falsification theory attracted criticism or invited inconsistent deployment among proponents of evolution. A prominent philosopher of science, Larry Laudan, who reviewed the court’s verdict in an article, disagreed with the way the theory was used for boundary-work by the scientists and others defending evolution (Numbers, 2006). He argued that an effective boundary-work strategy based on the *topos* was not that scientific creationism was unfalsifiable (as was being asserted by many of the scientists), but that it had been falsified (Numbers, 2006; Laudan, 2009). Laudan’s (2009) charge against the scientists claiming that scientific creationism was unfalsifiable was that they were taking an easy and an intellectually less defensible way out of the problem. He suggested taking on creation scientists’ claims directly and showing that they had been falsified (Laudan, 2009), especially since a number of scientists stated that this was the case given “the findings of anthropology, biology, geology,” and so on (Numbers,
2006, p. 276). Moreover, the use of Popper’s falsification theory by the scientists defending evolution was inconsistent. While some scientists claimed that scientific creationism was unfalsifiable, others said that it had been falsified (Numbers, 2006).

Thus, not only did creation scientists attack evolution as metaphysics based on their selective interpretation of Popper, the way the falsification theory was used for boundary-work by proponents of evolution during the Arkansas trial attracted disagreement or inconsistency among themselves. In this way, Popper’s falsification theory appears to have proven a vulnerable rhetorical *topos* for boundary-work in the dispute between evolution and scientific creationism (Holtzman & Klasfeld, 1982). This predicament, as we will see, perhaps partly explains why proponents of evolution appear to have downplayed it in favor of methodological naturalism in later disputes and discourses involving evolution and its opponents.

**ii. The 1986 Brief to the Supreme Court**

That Popper’s falsification theory appears to have lost its sheen as a rhetorical *topos* for boundary-work after the Arkansas trial can be seen from an event only five years after the trial. In 1986, a group of prominent scientists submitted a brief to the Supreme Court that took up the constitutionality of a Louisiana law mandating equal class representation for evolution and creation science. They used methodological naturalism as their main rhetorical *topos* for boundary-work, although they couched methodological naturalism in phrases such as “naturalistic explanations” (Shermer, 1991, p. 529) and the “scientific method” (p. 529).

In 1985, Louisiana, like Arkansas before, passed a law giving equal class representation to creation science and evolution (Shermer, 1991). However, based on the
verdict in the Arkansas trial, a federal court struck down the law as unconstitutional the same year without holding any trial (Shermer, 1991). In yet another twist, however, through a maze of legal technicalities, the case ended up with the United States Supreme Court, which agreed to hear it (Shermer, 1991). The group of scientists, which included seventy-two Nobel laureates, feared that the Supreme Court might reverse the federal court’s ruling. Hence, they submitted to the court a 27-page brief demarcating science (evolution) from creation science (Shermer, 1991). In 1987, the Supreme Court voted 7-2 to uphold the federal court’s decision in declaring the Louisiana law unconstitutional (Shermer, 1991).

The deployment of methodological naturalism by the scientists was significant in spite of the fact that methodological naturalism (“Natural law”) had been used earlier by the judge during the Arkansas trial as one of several rhetorical topoi (Prelli, 1989, p. 229). It was significant because despite the victory for proponents of evolution in the Arkansas trial, the scientists presenting a brief to the Supreme Court five years after this victory did not use the main rhetorical topos that they had used during the Arkansas trial—Popper’s falsification theory.

The choice of methodological naturalism by the scientists appears to have been due to a perceived rhetorical superiority of methodological naturalism as a rhetorical topos for boundary-work against scientific creationism in comparison to falsification theory, which had proved troublesome during the Arkansas trial. Although both falsification theory and methodological naturalism imply evidence-based inquiry within the natural world, they seem to convey different rhetorical emphases when used as rhetorical topoi for boundary-work. Methodological naturalism appears to be a more overarching, direct, and sweeping dictum
binding science to natural causes and “ignoring” (Regal, 2008, p. 624) supernatural explanations. Conversely, the term falsification theory appears to emphasize the testability or falsifiability (or its lack) of a theory in the empirical world for it to be considered scientific (Popper, 1994). Rhetorically, the term falsification theory appears more complex or requires more of an explanation than the term methodological naturalism. Methodological naturalism appears to be a term more comprehensible even to laypersons, especially when it is explained in terms of keeping science separate from supernaturalism, commonly identified with faith.

Although there is no explicit evidence that proponents of evolution consciously downplayed falsification in boundary-work after the Arkansas trial, there is compelling circumstantial evidence that they may have done so. The difficulty and confusion the use of falsification theory posed to proponents of evolution during the Arkansas trial have been frequently noted by science scholars defending evolution in scientific journals or Web sites. In an article in the journal *Science*, Brush (1989) has stated rather bluntly that “Popper used [falsification] criterion to cast doubt on the scientific character of evolutionary theories in biology” (p. 1124). He has added that even though Popper provided a later clarification, “considerable damage had been done” (Brush, 1989, p. 1124). Brush (1989) was referring to what he termed was “exploitation” of Popper’s theory by creationists (p. 1124). He gave an example of a legislative proposal drafted based on the supposed unfalsifiability of evolution that demanded equal treatment for creation science alongside evolution in public schools (p. 1124).

Similarly, writing in *Biology and Philosophy*, Stamos (1996) has noted that in Popper’s clarification he failed to offer an “unequivocal statement that evolutionary biology
is genuinely scientific” (p. 172). Stamos (1996) has speculated about potential adverse consequences of more widespread acceptance of Popper’s skeptical position on evolution: “How many grants and careers would be lost if the latter [Popper’s qualified defence of evolution] would become the accepted view” (p. 172). On the pro-evolution Usenet newsgroup The TalkOrigins Archive, a statement on an FAQ page reads that “science is not a simple process of falsification of hypotheses. The philosophy of science is not just the views of Popper, which have some real problems” (Wilkins, 1997).

Moreover, falsification theory has also been criticized conceptually as a demarcation tool by philosophers of science such as Thomas Kuhn, Imre Lakatos, and Paul Feyerabend (Newbold & Roberts, 2007). They have pointed out that falsification seldom works in actual practice where scientists often ignore falsified observations to continue research (Newbold & Roberts, 2007). Rennie (2002) has summed up this conceptual problem with the falsification theory rather dramatically: “it would eliminate too many branches of clearly scientific endeavor” (p. 80). On the other hand, perhaps equally importantly, some scholars have expressed a fear that falsifiability will admit within the folds of science “astrologers, soothsayers, and quacks” (Matthews, 2008). These concerns about Popper’s falsification theory, seen along with difficulty that the theory posed during the Arkansas trial, suggest that it fell out of favor as a prominent rhetorical topos for boundary-work after the Arkansas trial. In the conclusion to his article in the popular science magazine Scientific American, Rennie (2002) has emphasized methodological naturalism: “A central tenet of modern science is methodological naturalism” (p. 84). It bears repeating that he criticized falsification theory earlier in the article.
In addition to its rhetorical advantage, the prominence of methodological naturalism as the main rhetorical *topos* in the 1986 Supreme Court brief may also have been partly due to the emergence of the ID movement itself, which during its formative years attacked methodological naturalism as a fundamental premise for doing science (Numbers, 2006).

### iii. The Rise of ID and Methodological Naturalism

The turning of proponents of evolution to methodological naturalism (under some description) as their main rhetorical *topos* for boundary-work appears to have coincided with the rise of the ID movement around the late 1980s. In a famous 1991 book titled *Darwin on Trial*, the author Philip Johnson, a lawyer and one of the original proponents of the ID movement, accused proponents of evolution of promoting the philosophy of materialism or what is also known as metaphysical or scientific naturalism (Numbers, 2006). By this he meant a philosophical paradigm that rejects the existence of a supernatural agency or that believes that science is the only or the fundamental means of acquiring knowledge (Numbers, 2006; Miller, 2009). The equating of evolution’s defense with atheism (or philosophical naturalism) was an early and a favored rhetorical strategy of ID proponents (Numbers, 2006), who attacked evolution on philosophical, rather than scientific, grounds, where scientific creationism had failed (Ruse, 2001). The ascendance of methodological naturalism as the main rhetorical *topos* for boundary-work against evolution’s opponents appears to have been partly in response to this rhetorical strategy by ID proponents.

In response to ID proponents’ equating of methodological naturalism with rejection of religion and God, scientists or scholars of science have sought to rhetorically differentiate methodological naturalism from metaphysical or philosophical naturalism or materialism
(Ruse, 2001; Miller, 2009; Numbers, 2006). Although there are, as Forrest (2000) has argued, historical links between methodological naturalism and metaphysical or philosophical naturalism, scientists point out that methodological naturalism ignores—but does not refute (as is alleged by ID proponents)—a supernatural agency or cause (including God or any other supernatural agency) (Forrest, 2000; Miller, 2009). As we will see, partly due to methodological naturalism’s rhetorical superiority as a topos for boundary-work and partly because it had to be asserted in response to ID, methodological naturalism appears to have replaced falsification theory as a dominant rhetorical topos for boundary-work after 1986.

However, the turning of proponents of evolution to methodological naturalism seems to have been gradual, with continuing minor references to Popper’s falsification theory and the relatively recent direct use of the term methodological naturalism for boundary-work, although methodological naturalism was used earlier couched in other descriptions—for example, the “natural law” (Prelli, 1989, p. 229) or the “scientific method” (Shermer, 1991, p. 529). The term methodological naturalism seems not to have been directly used in a major boundary-work dispute with evolution’s opponents until perhaps the 2004-05 Dover, PA, trial between evolution and ID. While I am not making any definitive claim on this count, my point is that the direct use of the term methodological naturalism appears to have been a recent phenomenon.

Although I do not explore reasons for or rhetorical effects of the direct use of the term, I would argue that the term methodological naturalism appears to be a rhetorical improvement over its previous substitutes “natural law” (Nelkin, 1982, p. 144) or “scientific
method” (Shermer, 1991, p. 529). The substitute terms seem to lack the rhetorical fit of the term methodological naturalism. Arguably, even with an explanation, the term “natural law” may appear to nonscientific audiences a bit dogmatic, with its law-like connotations, as well as a bit vague. The second term seems to evoke unfortunate connotations of there being a single, unitary scientific method. In contrast, the term methodological naturalism implies a method—a term readily identifiable with the concept of inquiry, although the term methodological naturalism probably needs clarification for nonscientific audiences and is often clarified by proponents of evolution. Future rhetorical studies of boundary-work may explore implications of the direct use of the term methodological naturalism in boundary-work disputes to find out more specifically the role that this topos plays in boundary-work disputes.

iv. The 2002 ID Resolution of the American Association for the Advancement of Science (AAAS)

The growing importance of methodological naturalism as a rhetorical topos for boundary-work against evolution’s opponents, along with a diminishing role for falsification theory, can be glimpsed in a 2002 resolution on ID adopted by the American Association for the Advancement of Science (AAAS), “the largest general scientific organization in the world” (“American Association,” 2000 Annual Report). The resolution responded to a host of ID-related challenges to science curricula of public schools across the country. For example, in Cobb County, Georgia, biology textbooks were required to carry a sticker stating that “evolution is a theory, not a fact” (“American Association,” 2002, “AAAS Board Resolution Urges”). After an ACLU lawsuit forced the district school board to change this
policy, the board still advocated balancing the “disputed view” of evolution in science classes with alternative theories (“American Association,” 2002, “AAAS Board Resolution Urges”). In Ohio, a local school district supported including ID in schools’ science curricula (“American Association,” 2002, “AAAS Board Resolution Urges”). To respond to this growing trend of ID’s attempted infiltration of science curricula of public schools, the AAAS resolution was meant to convey to all stakeholders that evolution is a well-established scientific theory, whereas ID is a religious argument that does not belong in science classes (“American Association,” 2002, “AAAS Board Resolution Urges”).

In its boundary-work, the resolution referred to what appears to be methodological naturalism in phrases such as “scientific warrant,” “significant conceptual flaws in the formulation of ID,” and the “nature of science” (“American Association,” 2002, October 18). The first phrase is similar to the term “the scientific method” used for methodological naturalism by the scientists submitting a brief to the Supreme Court in 1986; the second phrase implies ID’s non-adherence to methodological naturalism; and the third phrase can be read as a looser reference to methodological naturalism.

On the other hand, the resolution also mentioned phrases such as “testing,” “empirical evidence,” and “scientific evidence” (terms central to falsification theory), but not the term “falsification” or “falsifiability” (“American Association,” 2002, October 18). On balance, the resolution appears to have highlighted methodological naturalism while downplaying falsification theory. Notably, however, the resolution did not use the term methodological naturalism directly, even though the resolution targeted ID, which had attacked methodological naturalism during its beginning years. The direct reference to methodological naturalism
naturalism occurred during the 2004-05 Dover, PA, trial, perhaps for the first time in a major dispute between evolution and its opponents.

v. The 2004-05 Dover, PA, Trial between Evolution and ID

In 2004, the Dover Area School District Board in Pennsylvania asked schools under its jurisdiction to introduce ID in science classes alongside evolution (Numbers, 2006). This decision sparked the first major legal battle between evolution and ID. A group of concerned parents saw the board’s action as violating the constitutional separation of religion and state (“United States”). They sought the help of ACLU to legally challenge the board’s decision (Numbers, 2006). The trial began in September 2005, and in December 2005, the judge announced his verdict (Numbers, 2006). In what mirrored the verdict of the Arkansas trial between evolution and scientific creationism of nearly 25 years ago, the decision in the Dover trial resulted in ID being declared as an unscientific and a religious argument unfit for science classes (Numbers, 2006; Katskee, 2006). The Dover trial was a landmark because it was the first clear repudiation of ID on legal grounds.

During the trial, methodological naturalism was the main rhetorical topos for boundary-work against ID (Numbers, 2006; Jones II, 2009), though there were indirect references to Popper’s falsification theory (Jones II, 2009). Additionally, perhaps for the first time in a major dispute, proponents of evolution used the term methodological naturalism directly for boundary-work. In his opening statement for the plaintiffs, Eric Rothschild pointedly told the judge that “at this trial, you will hear the parties use the term ‘methodological naturalism’” (“Kitzmiller v Dover”). Eric Rothschild began the statement
by referring to ID’s non-adherence to methodological naturalism (“Kitzmiller v Dover”).

Then, based on methodological naturalism, he repudiated ID’s claims to be a science.

But intelligent design will not accept the well-established boundaries of science and openly rejects methodological naturalism. Why? Because it has to. In the end, no matter how many stones intelligent design throws at the theory of evolution, the only alternative it presents for the development and diversity of life . . . is . . . an act of supernatural creation. That, by itself, establishes intelligent design as a religious argument, not a scientific argument (“Kitzmiller v Dover”).

In the defendants’ opening statement, Patrick Gillen called methodological naturalism an “inherently flawed so-called demarcation criteria” (“Kitzmiller v Dover”). It is also noteworthy that, while the plaintiff’s opening statement began with a reference to methodological naturalism, the defendants’ opening statement mentioned it only towards the end of the statement, as if it were an unimportant term of which much was being made. This suggests the effectiveness of methodological naturalism as a rhetorical *topos*, in that the opponents of evolution respond to it defensively: they deliberately downplay or attack it while at the same time being cognizant of its importance and mentioning it.

In his verdict, the judge referred to methodological naturalism as the “ground rule of science today” (Jones II, 2009, p. 518). He further observed that “attributing” phenomena to explanations or causes outside the natural world is a “science stopper” (Jones II, 2009, p. 519). Terms and phrases related to Popper’s falsification theory used during the trial included “testable” (Jones II, 2009, p. 518), “refutable” (p. 524), and “ruled out” (p. 527), but only
peripherally the term “falsification” or the name Popper (if that) (Jones II, 2009). A minor topos by the early years of this century, Popper’s falsification theory was almost a non-player during the 2005 debate at Iowa State between evolution and ID. The weakening of falsification theory as a rhetorical topos, along with an increase in the importance of methodological naturalism, shows that boundary-work at its core is about obtaining rhetorical advantages in academic and scientific organizations. We also see from this change how boundary-work is a collaborative exercise involving competing parties (Taylor, 1996).

vi. The 2005 Debate at Iowa State between Evolution and ID

In the debate at Iowa State, proponents of evolution again directly used methodological naturalism as their main rhetorical topos for boundary-work against ID. But they did so in ways that show the topos has Taylor’s (1996) “historically and rhetorically adaptive” (p. 92) power in different scientific ecosystems in which boundary-work disputes occur. The debate at Iowa State differs from disputes mentioned earlier in the article in two important ways. First, it was fought in a scientific ecosystem of higher education. Second, the scientific ecosystem of the debate at Iowa State did not include a legal front. In recent years, opponents of evolution have attempted to broaden their reach to scientific ecosystems of higher education, with several academic scientists supporting ID filling faculty positions at select universities (Golden, 2005). In fact, John Templeton Foundation, a Pennsylvania-based philanthropic organization, funded research of many of these academic scientists (Golden, 2005). Among those who received the funding was Gonzalez, whose book supporting ID was written based on a Templeton grant. This foothold into higher education by opponents of evolution may in part have been motivated by their failure to gain acceptance in public
schools despite many years of efforts (Golden, 2005). The debate at Iowa State thus represents a new type of scientific ecosystem—a new battleground—in boundary-work disputes.

The debate was sparked by a 2004 book supporting ID co-authored by Gonzalez. Gonzalez’s book—titled *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery*—gained national limelight when its film version was shown at the Smithsonian in Washington, D.C, although the Smithsonian distanced itself from the event. This incident, along with other ID-related developments across the country, compelled Avalos to draft and circulate to a section of Iowa State’s faculty members a statement rejecting ID as science (see Appendix A). More than 120 faculty members of Iowa State, affiliated with both science and non-science departments, signed the statement. It was delivered to the university president and published in local newspapers, which published news articles, letters to editors, and editorials involving the debate. Avalos’s statement was backed by the American Association of University Professors (AAUP), and it inspired similar statements by faculty at Iowa’s two other Regents universities.

Faced with a major dispute between evolution and ID on its campus, Iowa State’s administrators had to find a way to balance protecting curricular boundaries of science with ensuring academic freedom to discuss controversial subjects, all within an environment of press scrutiny. To achieve this, Iowa State’s president asked the Faculty Senate to create a forum to discuss how and where ID can be taught in the university. Based on the senate’s recommendation, he left the decision of whether and how to include ID in the disciplinary curricula up to individual departments following the procedures for proposing and approving
a course. Moreover, an interdisciplinary course on ID was offered through the Honors
Program in the following semester. The course was jointly taught by faculty members from
science and humanities, Avalos being one of them. Gonzalez refused to join the forum on ID
created by the Faculty Senate, and he also refused an invitation to join the team that taught
the course critiquing ID. Gonzalez blamed his non-participation in both endeavors on
Avalos’s involvement with them. Methodological naturalism, rather than falsification theory,
played an important role in all of these elements. In addition, methodological naturalism also
appears to have played an indirect and subtle role in Gonzalez’s tenure decision, although the
Iowa State officials denied that the tenure decision had anything to do with the 2005 debate.

Methodological naturalism was the main theme in Avalos’s statement rejecting ID as
science (see Appendix A), appearing in three out of its four paragraphs, with the last two
paragraphs exclusively focusing on it. The first of these two paragraphs briefly described
methodological naturalism:

Methodological naturalism, the view that natural phenomena can be explained
without reference to supernatural beings or events, is the foundation of the
natural sciences. The history of science contains many instances where
complex natural phenomena were eventually understood only by adherence to
methodological naturalism.

Since both creationism and ID are premised on the idea of a creator, a designer, an
agent, or a supernatural agency (whether God or some other), methodological naturalism
strikes at the very heart of their arguments because it precludes from the domain of science
any consideration of or reference to supernatural causes (Ruse, 2001; Regal, 2008).
Methodological naturalism rules out a designer from ID. If the designer is ruled out, there can be no design or Intelligent Design. As Forrest (2000) and Condit (2003) have pointed out, science has long declared its inability to inquire into supernatural agency. If ID argues for the existence of such an entity, it must prove so with conclusive evidence (Forrest, 2000; Condit, 2003). The burden of proof, then, lies with ID with methodological naturalism as a rhetorical *topos* for boundary-work against evolution’s opponents.

Proponents of evolution also called methodological naturalism indispensable to science’s progress. Avalos’s description of methodological naturalism referred to how methodological naturalism has helped science unlock nature’s mysteries. A science professor wrote in a letter to the editor that “the lack of a scientific explanation for something does not serve as support for a supernatural theory” (Hargrove, *Iowa State Daily*, August 25, 2005). Another science professor reasoned that “anytime you incorporate the possibility of a supernatural explanation, you can’t accumulate any evidence” (Forgrave, *The Des Moines Register*, August 31, 2005). In this way, proponents of evolution portrayed methodological naturalism as both a necessary and an effective premise for scientific inquiry.

One measure of methodological naturalism’s effectiveness as a rhetorical *topos* for boundary-work against evolution’s opponents is the fierce opposition it encounters from them. This reaction is both expected and a little surprising given that methodological naturalism maintains separation from, rather than antipathy toward, supernatural/design. As noted earlier, opponents of evolution often accuse proponents of evolution of promoting philosophical or metaphysical naturalism, a belief that there can be no supernatural entity (Miller, 2009). This charge allows opponents of evolution to portray proponents of evolution
as promoting atheism (Numbers, 2006; Miller, 2009). However, proponents of evolution point out that methodological naturalism is different from philosophical naturalism and does not negate (or confirm) a supernatural power (Miller, 2009). As Wilkins (1997) has stated on the pro-evolution Usenet newsgroup the *TalkOrigins Archive*, one can accept methodological naturalism “in science without invalidating non-naturalistic ontologies.” To illustrate this position, Wilkins (1997) has further stated that “many things in the physical world are caused by many things together.” He has then reasoned that one might say that “a physical event is caused both by God and physical causes without being logically inconsistent” (Wilkins, 1997). However, opponents of evolution, especially some in the ID movement, have found it rhetorically more useful to brand evolution as “inherently” opposed to faith, shifting the debate . . . to the existence of God vs. the non-existence of God” (Miller, 2009, “Darwin, God,” p. 84). Another prong of their rhetorical strategy is rejection of methodological naturalism as a fundamental premise for doing science.

Opponents of evolution in the debate at Iowa State, including Gonzalez, strongly contested the claim that methodological naturalism is fundamental to science. Gonzalez called methodological naturalism a “disputed philosophical assumption that some want to impose on science” (*Iowa State Daily*, August 26, 2005). Calling methodological naturalism a mere "working hypothesis" (*Iowa State Daily*, August 26, 2005), he stated that "by elevating and broadening its status, the materialist artificially restricts what we can discover about the universe” (Gonzalez, *Iowa State Daily*, August 26, 2005). Other ID supporters called methodological naturalism a “popular but unproven assumption” (Gallus, Jr., Verkade, Ingebritsen, Weber, *The Des Moines Register*, September 4, 2005). An ID supporter pointed
out that methodological naturalism is only a “philosophical commitment” in science, and that if it is acceptable to have one type of philosophical commitment [materialism or atheism for some], it should be equally acceptable to have “another philosophical commitment” [a belief in a supernatural agency] (Moe, Iowa State Daily, August 30, 2005).

However, proponents of evolution pointed out that methodological naturalism has nothing to say, one way or another, about matters of religion. The second paragraph focusing on methodological naturalism in Avalos’s statement begins: “Whether one believes in a creator or not, views regarding a supernatural creator are, by their very nature, claims of religious faith, and so not within the scope or abilities of science.” As a rhetorical topos for boundary-work against ID, methodological naturalism might be more conducive to signal to laypersons that the real domain of ID may be either religion or metaphysics. If such an outcome is achieved, proponents of evolution would gain an important rhetorical victory given a common perception that science is often arrogant and disrespectful of other modes of knowledge, such as religion (Taylor, 1996).

Indeed, some proponents of evolution in the debate at Iowa State pointed out that science does not disrespect religion (Strickler, Iowa State Daily, August 25, 2005). A science professor wrote in a letter to the editor: “We must remember that scientists oppose the teaching of Intelligent Design, not because it is wrong, but because it is not science” (Hargrove, Iowa State Daily, August 25, 2005). An editorial stated that ID “might have a proper place in classes pertaining to religion or history” (Iowa State Daily, August 29, 2005). The general secretary of the American Association of University Professors (AAUP), who congratulated the faculty members who signed Avalos’s statement, told a newspaper reporter
that “AAUP’s stance on Intelligent Design is not meant to demean religion” (Iowa State Daily, September 26, 2005). An extension of this line of thinking, premised on methodological naturalism’s notion of separating scientific and religious spheres, was seen in the course on ID taught in Iowa State following the debate.

Even before the debate, an Honors seminar course sympathetic to ID titled “God and Science” was underway at Iowa State (Golden, 2005). The instructor Thomas Ingbritsen, associate professor of genetics and one of the opponents of evolution in the debate at Iowa State (Iowa State Daily, December 12, 2005), taught the course from ID’s standpoint (Golden, 2005). The course had been offered since 2000 but was briefly interrupted in 2003 over concerns that a course “exclusively focused” on religious views was not “appropriate” for a “secular, state” university (Golden, 2005). After Ingbritsen agreed to include a mainstream biology textbook in the course to allay such fears, the course was allowed to resume (Golden, 2005).

In response to this ongoing course, a new course was offered at Iowa State that critiqued ID’s claims (Golden, 2005). Titled “The Nature of Science: ‘Why the Overwhelming Consensus of Science is that Intelligent Design is Not Good science,’” the new course was team taught by Avalos and two faculty members from science departments who had signed Avalos’s statement (“Spring 2006”). Taught as an Honors seminar in spring 2006, the course was premised on methodological naturalism, as can be seen from a brief excerpt from the course description: “Comparing these two ideas [evolution and ID] by drawing from consensus views of those who study the natural world and the nature of science, this seminar
will address why biological evolution is considered to be good science and why intelligent design is not” (“Spring 2006”).

Avalos saw the course as one of the outcomes of his statement rejecting ID as science. He described the course as one that “brought scholars of religion and scientists together.” While Popper’s falsification theory as a rhetorical *topos* for boundary-work may also have provided a rationale for such a course, methodological naturalism’s direct demarcation between natural (scientific) and supernatural (religious) realms appears to have provided a clearer context and rationale for such a course. Although the university had remained neutral in the debate, the university benefitted indirectly from the new course. The course provided an outlet for discussions of ID, following the issue of Avalos’s statement rejecting ID. Although Ingbritsen already taught an Honors seminar focused on ID, the new course offered students and other stakeholders another side of ID. At the same time, Iowa State had left up to individual departments to decide following their procedural channels whether and how to include ID in the curriculum. This state of affairs meant that Iowa State was seen to both maintain its *ethos* as a science and technology university and provide a platform to ID in keeping with academic freedom to discuss controversial viewpoints, which was how Iowa State’s president described ID (Dillon, *The Tribune*, September 6, 2005).

Second, the course might also have shown Iowa State to be respectful of what Taylor (1996) calls “other forms of rationality” (p. 167), such as religion. For a public university with diverse stakeholders, this would be an important rhetorical victory.

Finally, methodological naturalism’s indirect influence may perhaps be seen in Gonzalez’s tenure denial, although in its reasons for Gonzalez’s tenure denial Iowa State did
not make any reference to the 2005 debate (“Guillermo”). Gonzalez was denied tenure in 2007, and he left Iowa State in 2008. Although the faculty members associated with his tenure decision denied that the Iowa State’s debate had anything to do with it (“Guillermo”), they acknowledged that his ID-related activities entered the deliberations over his tenure (Bergin, 2007). Just as the new Honors course and the consideration of ID at the departmental level suggest balance between curricular integrity and academic freedom, Gonzalez’s tenure decision reflects in part institutional science’s control over its membership (Kinsella, 2005).

Methodological naturalism’s implications for science as a mode of knowledge bounded by the natural world did make Gonzalez look like an anomaly in a science and technology university during the debate. For example, a newspaper article reported that “national scientific journals are skeptical about Gonzalez. According to Physics Today, he’s unusual as a working scientist who has allied himself with an organization that most major science societies hold in low regard [a reference to the Discovery Institute, a Seattle-based organization promoting ID]” (Basu, The Des Moines Register, August 24, 2005). An Iowa State faculty member and a member of the Faculty Senate told a newspaper reporter that “Dr. Gonzalez is there, perhaps, alone. I don’t know how many supporters he has in his department” (The Des Moines Register, August 26, 2005).

Boundary-work by proponents of evolution in the debate at Iowa State relied almost exclusively on methodological naturalism. This near-total reliance on methodological naturalism was unlike what transpired in the Dover trial in which there were references to the falsification theory—granting, however, the fact that the Dover, PA, dispute was much larger
in scope (compare, for instance, Avalos’s one-page statement rejecting ID as science with the opinion of the judge in the trial spanning 139 pages) (“United States”). In fact, during the debate at Iowa State, Popper’s falsification theory was hardly mentioned, if at all. For example, Avalos’s statement rejecting ID as science (Appendix A) makes no direct or indirect reference to it. This dominance of methodological naturalism in the debate at Iowa State suggests that the change of the main rhetorical topos for boundary-work against evolution’s opponents from falsification theory to methodological naturalism is perhaps complete or nearly so.

Conclusion

I have argued that there has been a change in the main rhetorical topos for boundary-work against evolution’s opponents, from Popper’s falsification theory in the early 1980s to methodological naturalism in the early years of the twenty-first century. This change was not fashioned by scientists and other proponents of evolution acting alone to guard science’s boundaries. Rather, it seems to have been based on more than two decades of exchange between evolution and its opponents (scientific creationism/ID), a process that may well have allowed proponents of evolution to rhetorically adapt and finesse their boundary-work against evolution’s opponents. In this way, my analysis supports Taylor’s (1996) view of boundary-work as rhetorically and historically adaptive processes involving both collaborating and competing actors.

This view allows us to see boundary-work as a fundamentally rhetorical and political activity for contestants pursuing concrete and practical benefits in scientific and academic organizations: research funding, academic ranking, tenure, relations with stakeholders, and so
on (Kinsella, 2005; Shapin, 1992; Khazanchi & Munkvold, 2000). To pursue these benefits that involve diverse pressures and stakeholders, it may be useful to take into account what competitors or critics are saying and make necessary adjustments. Methodological naturalism illustrates how science is a political and an institutional category with important stakes, among them the scientific progress of humanity and knowledge of future generations (Kinsella, 2005; Rouse, 1996; Shapin, 1992).

It was only in the exchange, over the history of the debate between evolution and its opponents, that it became clear to scientists that methodological naturalism is a more effective rhetorical *topos* for boundary-work against evolution’s opponents than Popper’s falsification theory. Methodological naturalism precludes design arguments such as ID or creationism by definition (Ruse, 2001). While ascribing supernatural explanations to natural phenomena will be equally frustrating with Popper’s falsification theory as a rhetorical *topos* for boundary-work (since it is difficult to test supernatural causes), methodological naturalism appears rhetorically to be a more overarching and sweeping *topos* for boundary-work against evolution’s opponents since it explicitly rejects supernaturalism.

Additionally, methodological naturalism enables proponents of evolution to implicitly point at territories that arguments such as ID or creationism may occupy: religion, theology, metaphysics, history, and so on. Even the equating by ID proponents of methodological naturalism and materialism/atheism—which many among proponents of evolution have strongly criticized (Miller, 2009)—appears to strengthen the case of proponents of evolution and for methodological naturalism. They can insist on science being guided by methodological naturalism while still showing deference to religion as a distinct area of
inquiry dealing with questions for which science—or methodological naturalism—cannot provide an answer. Following the debate at Iowa State, the course on ID jointly taught by scholars of religion and science was premised on methodological naturalism. This aspect of methodological naturalism also points to its political usefulness for proponents of evolution.

Methodological naturalism’s success as a rhetorical *topos* in large part explains why ID has not been able to undermine scientists’ boundary-work despite years of efforts devoted to this task (Numbers, 2006), and despite its attempt to equate methodological naturalism with atheism.

Besides suggesting how Taylor (1996)’s view of boundary-work is useful, this article highlights the rhetorical nature of boundary-work in these disputes. First, it is important to remember that the main difference between methodological naturalism and Popper’s falsification theory as rhetorical *topoi* for boundary-work against evolution’s opponents is rhetorical, since both concepts require searching for and testing evidence in the natural world. Furthermore, the emergence of methodological naturalism, along with a fading away of Popper’s falsification theory as a *topos* in these disputes, does not seem explainable as a coincidence or a spontaneous deployment of a *topos* for boundary-work against ID. The emergence of methodological naturalism, as well as shifting away of proponents of evolution from Popper’s falsification theory, appears to have been a deliberate rhetorical choice on part of proponents of evolution, but one which developed over time, growing in influence.

Moreover, a rhetorically and historically adaptive view of methodological naturalism allows it to be seen as a rhetorical basis of argumentation between evolution and its opponents rather than as a defining, immutable feature of science that some philosophers of
science have criticized it for appearing as. Laudan (2009) calls it arbitrary and difficult to
defend, and as a philosophical position it may be. But as a rhetorical *topos* it has great power.

Lastly, the historical and rhetorical development of these *topoi* for boundary-work
suggests their wide impact. They influence public education in science in far-reaching ways,
as dramatically illustrated in the Dover trial between evolution and ID, where the judge
declared ID an unscientific argument that could not be taught alongside evolution. And they
influence higher education policy and practice, as in the debate at Iowa State, where faculty
were mobilized to define university policy, a new course was developed to finesse the
university’s relations with the public (among other reasons), and a controversial tenure
decision was made (Bergin, 2007; “Guillermo”).

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Appendix A: Avalos and His Supporters’ Statement Rejecting ID as “Science”

STATEMENT ON INTELLIGENT DESIGN
BY IOWA STATE UNIVERSITY FACULTY

We, the undersigned faculty members at Iowa State University, reject all attempts to represent Intelligent Design as a scientific endeavor.

Advocates of Intelligent Design claim that the position of our planet and the complexity of particular life forms and processes are such that they may only be explained by the existence of a creator or designer of the universe. However, such claims are premised on (1) the arbitrary selection of features claimed to be engineered by a designer; (2) unverifiable conclusions about the wishes and desires of that designer; and (3) an abandonment by science of methodological naturalism.

Methodological naturalism, the view that natural phenomena can be explained without reference to supernatural beings or events, is the foundation of the natural sciences. The history of science contains many instances where complex natural phenomena were eventually understood only by adherence to methodological naturalism.

Whether one believes in a creator or not, views regarding a supernatural creator are, by their very nature, claims of religious faith, and so not within the scope or abilities of science. We, therefore, urge all faculty members to uphold the integrity of our university of "science and technology," convey to students and the general public the importance of methodological naturalism in science, and reject efforts to portray Intelligent Design as science.
Appendix B: Methods

Data Collection

This study is part of a qualitative research project comprising interviews with the two leading debaters in the debate at Iowa State: Hector Avalos, the religious studies professor in Iowa State, who largely composed the faculty statement rejecting ID as a science (see Appendix A), and Guillermo Gonzalez, an assistant professor in the Department of Physics and Astronomy in Iowa State, who co-authored a book supporting ID that sparked the debate.

I interviewed Avalos about the process of drafting and issuing the statement rejecting ID as science that he composed (see Appendix C for a list of questions to Avalos). Because there was no counter statement issued by ID supporters in the debate (although some press reports contradict this), I interviewed Gonzalez about the companion Web site to his book—www.privilegedplanet.com (see Appendix D for a list of questions to Gonzalez). I did not ask Gonzalez questions about the debate itself to avoid causing unintended discomfort to him because the debate had been widely covered in the local press, and, although Avalos and his supporters denied that their statement targeted Gonzalez, it had come to be associated with him. Moreover, Gonzalez was coming up for tenure and may not have wanted to speak with me about the debate, especially since he indicated to me during the interview that the “controversy” (Iowa State’s debate) had caused him considerable stress. Both Avalos and Gonzalez agreed to let me use their real names in the project. Both interviews were tape recorded and fully transcribed.

In addition the interviews, I reviewed two scrapbooks shared by Avalos that contained a chronologically-arranged, selective—although not one-sided upon my
inspection—press account of the debate. The clippings in the scrapbooks included news articles, letters, and editorials on the debate. I also reviewed Avalos’s statement rejecting ID as science and previous, multidisciplinary boundary-work literature, including select texts related to the legal disputes involving evolution and its opponents.

**Data Analysis**

After reading the transcripts of my interviews with Avalos and Gonzalez multiple times, I summarized—based on the order of questions—each of their answers into one or more phrases. I then divided these phrases into broader categories (e.g., drafting of the statement, the ID critique, web site features, controversy in the debate, and so on). Next, I applied this categorization to my notes from the scrapbook. This process of coding and categorizing helped me to look up and include evidence to back up my rhetorical analysis of the documents in the case (Lincoln & Guba, 1985).

My rhetorical analysis is based on a close reading of multiple texts related to boundary-work disputes over the last three decades, including those related to Iowa State’s debate (Jasinski, 2001). Since my investigation was historical, examining multiple texts seemed to be a good choice. Jasinski (2001) has stated that rhetorical exploration of enduring controversies benefits from “engaging intertextual dynamics” (p. 95).
Appendix C: Questions for Hector Avalos

- Please describe the process of the drafting of the Statement on Intelligent Design by Iowa State University faculty?
- How did you choose what to include in the statement? What were your primary and secondary purposes? Who were your main audiences?
- What responses did you receive to the petition?
- What has been the result of your petition? Are you satisfied with it? If not, what else do you think should happen?
- What do you think constitutes academic freedom? Do you think the issue raised in your petition is one involving academic freedom?
- How do you think it’s not an academic freedom issue? (Questions that I will ask: When is it not an academic freedom issue? When a professor crosses the line?)
- Did you receive any negative reaction to the petition because of the issue of academic freedom—for example, someone declining to sign because citing academic freedom?
- Is it fair to ask a science professor who is being interviewed his position on Intelligent Design? Is it a problem if a scientist writes a book favoring Intelligent Design but does not use if for promotional tenure?
- Have you seen the web site privilegedplanet.com? Do you think the web site is problematic if it is not linked to the ISU web site?
- The statement does not name Dr. Gonzalez. Was that a deliberate decision? Why?
- Did you consider including in the statement any kind of acknowledgement of Dr. Gonzalez’s viewpoint? If no, why not?
Appendix D: Questions for Guillermo Gonzalez

- The home page of your web site “privilegedplanet.com” looks identical to the cover of your book. What role did you play in designing it? How did you choose the name “privileged planet”?

- Please describe the process of the construction of your web site privilegedplanet.com.

- The tagline at the bottom of the web site, “How our place in cosmos is designed for discovery.” Why did you highlight the line this way?

- Who is/are your targeted audience(s) for the FAQ link?

- On the “bios” page linked to “authors,” there is a picture of yours with a radar-like dish in the background. (Question that I will ask: What is it? Did that appeal to you?) Was the photo a deliberate choice? If so, why?

- In your description in the “bios,” in the line listing the fellowships, grants, and awards you have won, the first mention is that of NASA. Was this a deliberate choice? If so, why?

- Why didn’t you link your web site privilegedplanet.com to your ISU web page? Did you consider linking it? Can one separate, as it were, two distinct professional identities?

- What in your view constitutes academic freedom? Do you think it is important? Is your web site privilegedplanet.com about academic freedom since it’s not linked to your academic web page?

- What reactions have you received to your web site privilegedplanet.com?

- How does your profession inform your interest in Intelligent Design?
• Do you plan to make any changes to privilegedplanet.com? If so, what changes do you have in mind? Why do you think the changes are needed?

• Is there anything else you would like to say? Any important areas I did not cover?
Chapter 4. Boundary-Work Involving Academic Freedom: Deboning Intelligent Design in Higher Education

A paper to be submitted to *Journal of Business and Technical Communication*

Anish Dave

In fall 2005, a book supporting Intelligent Design (ID), co-authored by an assistant professor of astronomy at Iowa State University, prompted more than 120 of the university’s faculty members to issue a statement rejecting ID as science (Appendix A). The incident triggered a debate in the local press between supporters of teaching only evolution and supporters of teaching and/or researching ID as well (hereafter proponents and opponents of evolution, respectively). Subsequently, Iowa State’s president Gregory L. Geoffroy asked the Faculty Senate to discuss ID (*Iowa State Daily*, August 25, 2005). Based on the senate’s recommendation, he left the decision of whether and how to include ID in the curriculum up to “individual departments” following the established procedure for proposing and approving courses (*Dillon, The Tribune*, September 6, 2005). A course critiquing ID was offered in the following semester. Like many earlier controversies over the teaching of evolution in public schools, the debate at Iowa State saw supporters on both sides invoke academic freedom to do what Thomas Gieryn (1983) has termed “boundary-work” (p. 781; Pennock, 2001; Wexler, 2005)—to use rhetoric to create or maintain a boundary between science and “non-science” (Gieryn, 1983, p. 788). However, unlike previous public school controversies, this debate in higher education saw proponents of evolution use academic freedom to both reject and engage their opponents’ claims. The differences between the debate at Iowa State and similar disputes in public schools are instructive for our understanding of boundary work.
involving academic freedom—an underexplored basis for boundary-work between evolution and its opponents (creationism/ID).

Gieryn (1983) has defined boundary-work as “attribution of selected” qualities to scientific practices, knowledge, “methods,” “values,” and the like, by scientists and their supporters to protect the “intellectual authority” and resources of science from viewpoints they do not consider scientific (pp. 782-783; Gieryn, 2008). However, boundary-work is also done by those who are objects of boundary-work by scientists and their supporters (Taylor, 1996). Both collaborating and competing actors draw boundaries around science on several interrelated fronts: legal, scientific, academic, legislative, public, and so on (Taylor, 1996). It is in the interacting or taking into account of one another’s positions on the part of these actors and fronts that boundaries of science are temporarily settled (Taylor, 1996). Taylor (1996) has termed actors and fronts involved in a boundary-work dispute its “scientific ecosystem” (p. 10). The term complicates the notion of boundary-work as “rhetorical practices” involving diverse stakeholders contributing to a “contextual and symbolic stabilization of the ecosystem” around a notion of science (Taylor, 1996, p. 171, p. 226). I use this term to distinguish between public schools and higher education as two broad types of scientific ecosystems in boundary-work disputes.

Studies of sociology, rhetoric, and history of science have explored different aspects of boundary-work disputes (Gieryn, Bevins, & Zehr, 1985; Taylor & Condit, 1988; Lessl, 1988; Prelli, 1989; Taylor, 1996; Weaver, 1997; Campbell, 2003; Condit, 2003; Numbers, 2006; Gieryn, 2008). However, with the notable exception of Taylor and Condit’s 1988 study, most other studies have generally given short shrift to academic freedom within these
disputes (Pennock, 2001). Indeed, Taylor & Condit’s (1988) is the only detailed rhetorical account on the subject. This treatment is surprising given that these disputes are about scientific education and academic freedom has regularly been invoked in them for boundary-work. Indeed, the scant attention given to academic freedom belies the persistence with which it has been invoked in boundary-work disputes. Also, as Pennock (2001) has pointed out in his essay, boundary-work disputes raise important questions concerning educational philosophy, and academic freedom seems to be a central question in this regard.

Broadly, boundary-work involving academic freedom has meant each side in the dispute claiming that its view of academic freedom is consistent with genuine scientific education while that of its opponent promotes flawed or incomplete science (Wexler, 2005; “Kansas Evolution”). Specifically, proponents of evolution posit that academic freedom in science classes requires boundaries of science as drawn based on general scientific consensus (Taylor & Condit, 1988; Lessl, 1988). Conversely, opponents of evolution argue that academic freedom warrants that so-called “boundaries” of science include “minority” viewpoints not meeting the approval of the majority among the scientific community (Taylor & Condit, 1988, p. 297; Taylor, 1996).

The inadequate scholarly attention to academic freedom in these disputes (Pennock, 2001), as pointed out, may be related to the fact that academic freedom has been declared by courts as irrelevant or secondary to these disputes (“Edwards”; Uerling, 2000). Courts have subordinated academic freedom in these disputes to the Establishment Clause—or the First Amendment separation between religion and state (“Peloza versus Capistrano”; Uerling, 2000)—positing that creationism and ID are unscientific viewpoints whose inclusion in
public schools’ science curricula amounts to establishment of religion by state, an unconstitutional act (‘Peloza versus Capistrano’; Taylor & Condit, 1988; Numbers, 2006). Conversely, opponents of evolution in public schools have effectively used academic freedom for boundary-work on what Taylor & Condit (1988) have termed “populist” fronts (p. 293)—what is often called the court of public opinion—comprising mainly “nonscientifically trained” (p. 300) audiences, including those among politicians, school administrators, journalists, clergy, ordinary citizens, and so on (Taylor & Condit, 1988; Taylor, 1996; “Kitzmiller versus Dover,” Day 8). Effective boundary-work on these fronts has helped opponents of evolution in public schools find legislative, academic, and public support despite repeated legal rejections (Larson, 2003; Murray Thomas, 2007; Taylor & Condit, 1988).

Boundary-work based on academic freedom on populist* fronts by opponents of evolution in public schools has employed rhetorically cognate terms of academic freedom, such as “fairness” and “balanced treatment” (Taylor & Condit, 1988, p. 297). This boundary-work has helped opponents of evolution turn a dispute involving scientific concepts into a “populist” campaign for equal voice in science classes for “alternative theories of human origins” regardless of their scientific merit (p. 302, p. 296). This rhetorical strategy seems to have been premised on the reasoning that audiences on populist fronts often find scientific discourses difficult to understand, but they readily

* By the term “populist,” I do not make any reference to the 19th century populist movement, an agrarian ideology opposed to “plutocratic” means of production, such as railroads or banks (Williams & Alexander, 1994, p. 5).
understand concepts of equality and fairness (Taylor & Condit, 1988). Drawing mainly on Taylor & Condit’s 1988 article, one of the few to have looked into academic freedom for boundary-work (see Appendix B for methods), this article asks: How might proponents and opponents of evolution differ in their boundary-work based on academic freedom for populist audiences in scientific ecosystems of public schools and higher education?

Taylor and Condit (1988) explore the use of academic freedom as a rhetorical basis for boundary-work by opponents and proponents of evolution in public schools. Their article is both well-researched—based on a year-long sample containing both national and regional newspapers’ accounts of the 1981-82 Arkansas creationism trial—and is supported by other boundary-work studies and literature (Nelkin, 1982; “Kansas Evolution”; Pennock, 2001). Besides, it is one of the few studies, perhaps the only study, to have explored academic freedom as a rhetorical basis for boundary-work.

My analysis of boundary-work in the debate at Iowa State, in conjunction with that of boundary-work in public schools, suggests that differences in academic freedom in the two types of scientific ecosystems are central to different boundary-work on populist fronts by proponents and opponents of evolution in the two types of scientific ecosystems. Specifically, my analysis suggests that these differences are rhetorically appropriated by one or the other side in the disputes for different boundary-work.

I begin with a brief overview of the concept of academic freedom to provide context and to help the reader better understand its role in boundary-work. Next, I discuss boundary-work based on academic freedom on populist fronts in scientific ecosystems of public schools. Then, I analyze boundary-work in the debate at Iowa State based on academic
freedom on populist fronts. I conclude with a summary of my arguments and a brief comment on implications of my analysis for rhetoric and professional communication scholars interested in boundary-work.

**Academic Freedom: An Overview**

Academic freedom was conceived for and is more relevant to higher education (Stuller, 1998). Courts have considered it a distinct free speech under the First Amendment (Rabban, 1990; Uerling, 2000) to protect university academics in view of their responsibilities to foster higher learning through both teaching and original research (Rabban, 1990; O’Neil, 2008). Conversely, courts have reasoned that academic freedom is not designed for the “pedagogical model” of high schools because teachers at this level are not expected to produce new knowledge (Stuller, 1998, p. 13). Indeed, in elementary and secondary schools, academic freedom is restricted due to varying amounts of control over curricula with multiple stakeholders, including state boards, local and school authorities, among others (Stuller, 1998; Uerling, 2000).

The term “academic freedom” was introduced by the American Association of University Professors (AAUP) in a 1915 declaration for college and university academics (“1915 Declaration”). The declaration conceived of academic freedom in three parts: 1) "freedom of inquiry and research,” 2) “freedom of teaching,” and 3) “freedom of extramural [public] utterance and action” (“1915 Declaration”). Of these three parts, the declaration is silent on the first part except stating that it is generally protected (“1915 Declaration”). Linking the other two parts, the declaration calls for academic freedom for college and university academics subject to “their conclusions being gained by a scholar’s method” and
their public utterances avoiding “hasty or unverified or exaggerated statements” (“1915 Declaration”). The term “a scholar’s method” refers to “scientific integrity and competence” (“1915 Declaration”).

In 1940, AAUP in concert with the Association of American Colleges (later renamed the Association of American Colleges and Universities) issued a more specific statement on academic freedom based on the three parts outlined in the 1915 declaration (“1940 Statement”). The 1940 statement calls for “full freedom” in research subject to an agreement with the employing institution regarding any financial gain (“1940 Statement”). In teaching, academics have “full freedom in discussing their subject,” but they should refrain from introducing any “controversial matter” in classroom that has no bearing on the subject (“1940 Statement”). With respect to extramural or public speech, the statement advises academics to exercise restraint because their expressions may be seen as having been endorsed by their institutions. Each of these three parts came into play rhetorically in Iowa State’s debate.

These guidelines have been supplemented by the 1940 and 1970 interpretations of the 1940 statement; other, related statements of AAUP; and related statements of similar organizations. I next turn to boundary-work based on academic freedom on populist fronts by opponents and proponents of evolution in public schools.

**Boundary-Work Based on Academic Freedom in Public Schools**

Although both proponents and opponents of evolution in public schools have invoked academic freedom for boundary-work on populist fronts, opponents of evolution have been more effective (Taylor & Condit, 1988; Taylor, 1996). Their boundary-work has been based
on the following three main arguments (Taylor & Condit, 1988; Taylor, 1996; “Kansas Evolution”).

1. Evolution has a basis in naturalistic or “atheistic” (a claim disputed by many, if not most, scientists) assumptions and is taught in science classes (Miller, 2009). Therefore, “fairness” and “balanced treatment” demand that its “competing theories” (creationism or ID) based on theistic grounds should also be allowed (Taylor & Condit, 1988, p. 297, p. 295; Miller, 2009).

2. Both strengths and weaknesses of evolution should be presented, and gaps in evolution should be allowed to be explained through viewpoints rooted in “science” but having theological implications (“Kitzmiller versus Dover,” Day 6; Taylor, 1996).

3. Evolution is not completely scientific since it is impossible to see complete evidence for it (Taylor & Condit, 1988; Taylor, 1996). Hence, fairness demands that its “alternatives” should be explored (Witham, 2003, p. 148; Taylor & Condit, 1988).

Opponents of evolution perform this boundary-work by using an expansive, rhetorical sense of academic freedom that includes several rhetorically cognate terms of academic freedom: free speech, multiple viewpoints, tolerance, neutrality, absence of discrimination, freedom from indoctrination, lack of censorship, freedom of information, and the like (Taylor & Condit, 1988; Pennock, 2001; “Kansas Evolution”). Through these terms that come to work in a rhetorically similar way to academic freedom for boundary-work on populist fronts, opponents of evolution help foster a climate that reduces the dispute to a simple
question of being “fair” between two legitimately competing scientific worldviews (Larson, 2003) or teaching “both sides” of a subject (Witham, 2003, p. 148). This rhetorical equality is achieved by means of populist boundary-work because on scientific merit, opponents of evolution have shown themselves to possess little to no credibility (Taylor & Condit, 1988; Prelli, 1989; Taylor, 1996).

Many of these rhetorically cognate terms of academic freedom are part of the American “public idiom,” and they have helped opponents of evolution garner support for their boundary-work on populist fronts (Taylor & Condit, 1988, p. 297). This support is partly seen in numerous public polls favoring equal treatment for evolution and its opponents in public schools (Nelkin, 1982; Taylor & Condit, 1988; Taylor, 1996; Campbell, 2003). For example, a Gallup poll in 1999 showed that about seven in 10 Americans “favored teaching creationism along with evolution in public schools” (Witham, 2003, p. 148). In 2005 and 2006, 22 states proposed legislation allowing in some or other form discussions of both strengths and weaknesses of evolution along with presentation of its “alternatives” in public schools (Witham, 2003, p. 148; Murray Thomas, 2007). Additionally, challenges to evolution routinely arise in discussions involving state science standards (Witham, 2003; Larson, 2003; Numbers, 2006; “Kansas Evolution”).

In their boundary-work based on academic freedom on populist fronts, proponents of evolution in public schools have argued that allowing in science classes viewpoints that are judged unscientific by an overwhelming majority of scientists would undermine academic freedom of science teachers and students (“Kansas Evolution”). They have further contended that allowing such viewpoints in science classes would undermine scientific education itself
(“Kansas Evolution”). However, unlike their opponents, proponents of evolution in public schools have tended to use academic freedom for boundary-work only secondarily (Taylor & Condit, 1988). Instead, they have emphasized for boundary-work rhetorical topoi of science, such as falsification theory, Mertonian norms, and other “technocratic language” (Taylor & Condit, 1988, p. 304; Prelli, 1989). While rhetorical topoi of science have helped proponents of evolution in their boundary-work on the legal front, these topoi have proved difficult to translate on populist fronts (Taylor & Condit, 1988; Miller, 2009).

Another aspect of boundary-work based on academic freedom by proponents of evolution in public schools has been their summary rejection of boundary-work based on academic freedom by their opponents (“Kansas Evolution”; Taylor & Condit, 1988). This response by proponents of evolution in public schools has contributed to them being seen as arrogant and unfair on populist fronts (Taylor & Condit, 1988; Taylor, 1996)—a rhetorical deficit proponents of evolution addressed in the debate at Iowa State.

**Boundary-Work in the Debate at Iowa State Based on Academic Freedom**

In the debate at Iowa State between evolution and ID, both proponents and opponents of evolution invoked academic freedom to do boundary-work on populist fronts, which included local citizens, religious groups, politicians, journalists, and similar audiences regionally or nationally. That boundary-work by both sides appears to have been mainly on populist fronts is seen from the fact that the debate primarily played out in the local press. Unlike boundary-work based on academic freedom on populist fronts by proponents of evolution in public schools, boundary-work based on academic freedom on populist fronts by proponents of evolution in the debate at Iowa State both rejected and acknowledged their
opponents’ claims by rhetorically providing a space for their viewpoint in public statements and a course.

Background

The leading actors in the debate at Iowa State were 1) Guillermo Gonzalez, the astronomy assistant professor and a co-author of a book supporting ID—titled *The Privileged Planet: How Our Place in the Cosmos is Designed for Discovery*—that sparked the debate, and 2) Hector Avalos, a religious studies professor and a founding member of the Iowa State Atheist and Agnostic Society, who led the faculty members in issuing the statement rejecting ID as science (Appendix A). Gonzalez published his book in the spring of 2004. In the summer of 2005, the Smithsonian in Washington, D. C. decided to screen a documentary based on the book. This event alarmed Avalos, who was concerned due to the book’s growing association with Iowa State, an institution of science and technology. The screening sparked a debate in the local press between Avalos and Gonzalez along with a handful of their supporters.

On August 1, 2005, President Bush stated that both evolution and ID should be taught in public schools (*The Tribune*, August 4, 2005). This news moved Avalos enough to begin to draft his statement rejecting ID as science (Appendix A). By the end of August, Avalos had issued the statement after obtaining on it signatures of more than 120 faculty members from both science and non-science departments at Iowa State. The publication of the statement in local newspapers intensified the ongoing press debate between proponents of both sides, including faculty members, students, clergy, journalists, and ordinary citizens.
Gonzalez and his ID supporters responded by asserting that ID was scientific, although unfit for teaching at present. They accused Avalos and his supporters of spearheading a campaign to stifle his academic freedom. Avalos responded that if Gonzalez could claim academic freedom to state ID is science, he and his supporters could also do so to say it is not.

Avalos’s statement rejecting ID as science received backing of the AAUP, influenced faculty members at two other Regent universities in Iowa into issuing similar statements, and prompted Iowa State’s president to ask the Faculty Senate to discuss ID (Strickler, Iowa State Daily, August 25, 2005). Gonzalez refused to participate in these discussions citing Avalos’s involvement in them (Iowa State Daily, September 1, 2005).

The Faculty Senate decided that ID should be discussed at the level of individual departments, who may be able to better determine its implications for the departmental fields of study (Dillon, The Tribune, September 6, 2005). Additionally, a course critiquing ID was offered in the following semester at Iowa State based on deliberations of the Faculty Senate (“Iowa State,” November 29, 2005).

Gonzalez came up for tenure in 2007. However, he lost both his tenure and the subsequent appeal. When asked if the tenure denial had been influenced by the 2005 debate, the head of the Department of Physics and Astronomy denied that the debate played a role in their tenure deliberations (Bergin, 2007). However, a report prepared by the Center for Science and Culture, a program of the Discovery Institute, a Seattle-based organization promoting ID, blamed Gonzalez’s tenure denial on the debate and Avalos’s statement rejecting ID as science (“Center for Science”).
Boundary-Work Involving Academic Freedom

Collaborating and competing actors in the scientific ecosystem of Iowa State performed boundary-work on populist fronts based on four aspects of academic freedom in higher education: 1) free speech, 2) curricular freedom, 3) absence of censorship, and 4) discussion of controversial ideas (to understand how I arrived at these four aspects, see Methods – Appendix B). These aspects were separately invoked by the actors. Yet these aspects were also interlinked. Additionally, boundary-work by proponents of evolution included a justification—a rhetorical acknowledgement of the other side—based on two of the rhetorically cognate terms of academic freedom opponents of evolution effectively invoke in public schools: balance and fairness.

Boundary-Work Based on Free Speech by Proponents of Evolution

Boundary-work based on academic freedom involves free speech in two main ways: 1) the general sense of “freedom” to speak one’s mind and 2) the specific and technical sense in which the term is used in the 1915 and 1940 statements, including freedoms of speech in research, teaching, and public interaction about academic subjects in one’s field contingent on some important conditions or restrictions (“Peloza versus Capistrano”; “1915 Declaration”; “1940 Statement”). Boundary-work by proponents of evolution, led by Avalos, seemed to conflate these two senses. Avalos defined academic freedom as free speech in its general sense: “academic freedom pertains to whether you as an academic can come to conclusions and say so.” However, he also seems to have invoked in his boundary-work the specific sense of academic freedom as free speech as given in the 1915 and 1940 statements.
Boundary-work based on free speech on populist fronts by proponents of evolution at Iowa State appears to have assumed two parts: 1) implicit invocation of free speech for boundary-work by issuing the statement rejecting ID as science (Appendix A) and 2) explicit invocation of free speech to justify the boundary-work or rhetorically acknowledge the opponents’ boundary-work by providing space for their point of view in public statements. Together, these two parts speak to boundary-work as involving collaborating and competing parties (Taylor, 1996). The two parts also suggest that boundary-work of proponents of evolution in Iowa State generally differed from that of proponents of evolution in public schools, who, as we have seen, often summarily reject their opponents’ boundary-work (Taylor & Condit, 1988; “Kansas Evolution”).

Responding to a question whether his statement rejecting ID as science (Appendix A) involved academic freedom, Avalos invoked free speech in its general sense, as freedom to speak one’s mind. He stated that “it’s academic freedom [free speech] . . . to say that . . . there’s a group of scientists at Iowa State University who have come to [a] conclusion [that] Intelligent Design is not science.” He qualified his implicit characterization of his statement rejecting ID as science as free speech in its general sense by placing the statement in the context of a science and technology university. Avalos’s invoking of this context spoke to his boundary-work through academic freedom as free speech as expressed in the 1915 and 1940 statements.

Explaining the rationale behind the statement rejecting ID as science, Avalos remarked, “We are a school of science and technology. We should have a statement on what is science and what is not” (Strickler, Iowa State Daily, August 25, 2005). More specifically,
he stated that “whenever . . . someone says, well, they’re doing [ID] research at Iowa State, you should also know that there are scientists there who say it’s not science, and we don’t want to be associated with Intelligent Design. We want to state to the public that this is not science.”

To Avalos and the co-signers of his statement, any public perception that ID was sanctioned as a scientific theory by Iowa State, an institution of science and technology, undercut not only Iowa State’s scientific credentials but also their free speech as faculty members of such an institution to adjudicate, profess, impart, or simply defer to scientific knowledge as constructed rhetorically by a consensus among the majority of scientists. This concern for free speech of proponents of evolution at Iowa State—that is, for boundaries of science based on their free speech—may be seen in Avalos’s concomitant references to Iowa State as a science and technology university and its need to have a statement indicating what is and is not scientific speech. This concern may also be seen in his two statements employing the editorial “we”: (“. . . we don’t want to be associated with Intelligent Design”; “we want to state to the public that. . .”). Both statements may be read as implying an imprimatur regarding scientific speech within Iowa State with proponents of evolution.

Proponents of evolution have long argued that including viewpoints such as creationism or ID in science curricula—or admitting them within boundaries of science—even superficially undermines free speech of academics who defer to general scientific consensus to rhetorically determine scientific claims (Taylor, 1996; “Kitzmiller versus Dover,” Day 8). This boundary-work argument implies that if viewpoints such as creationism or ID, having been declared unscientific by an overwhelming majority of scientists, are
accepted to be taught or even mentioned uncritically alongside evolution, such an action may have an effect of equalizing the two types of contents on populist fronts. Such an equalizing may force those opposed to accepting creationism or ID as scientific to either teach or acknowledge it as having some kind of standing beside evolution (including challenging it). This scenario would undermine these academics’ free speech because free speech in scientific education, or boundaries of science based on free speech for proponents of evolution, is contingent on a rhetorical consensus within the scientific establishment (Prelli, 1989).

The connection between free speech argument of proponents of evolution and a rhetorical consensus within the scientific establishment—or boundaries of science based on free speech for proponents of evolution—rests on a premise that science operates according to meritocracy in which not everyone who wants to make claims can have authority or free speech to do so (Taylor, 1996). Taylor (1996) has expressed this restriction as a classic “privilege and not a right” argument (Taylor, 1996, p. 158). This restriction on free speech to make scientific claims (restrictions on boundaries of science based on free speech) implies that persons making scientific claims “earn” their authority or free speech based on testing and peer scrutiny of their claims according to methods and assumptions of the mainstream “scientific community” (Gieryn, Bevins, & Zehr, 1985, p. 401; Prelli, 1989, p. 223). This expectation is generically and implicitly mentioned in the 1915 declaration: “The responsibility of the university teacher is primarily . . . to the judgment [boundaries] of his own profession.” A statement of the Association of American Colleges and Universities explains this requirement more broadly: “Knowledge is not simply a matter of making an
assertion but of developing the evidence . . . that gain acceptance among those with the
necessary training and expertise [or into professional or disciplinary boundaries].”

As a corollary, claims purported to be scientific but not supported by testing and peer
review based on a rhetorical consensus within the scientific establishment are akin to
encroachment into free speech or authority of those who have earned their free speech based
on these requirements, as well as of those who defer to the authority or free speech of such
free speech of both who have earned authority or free speech to make scientific claims and
those who defer to such individuals in scientific matters is central to boundary-work.

Avalos’s concern for boundaries of science based on free speech of proponents of
evolution may also be seen in his remark that his statement rejecting ID as science was
needed “because it’s becoming increasingly clear . . . that Iowa State University is being
marketed as an Intelligent Design research center” (Forgrave, The Des Moines Register,
August 31, 2005). In other words, Avalos’s message here seems to be that opponents of
evolution have encroached into what is a forbidden territory for them: scientific free speech
at Iowa State. Avalos was referring to a brief mention made of Gonzalez’s ID “research” by
William Dembski (a leading ID proponent) during a 2003 public hearing in Austin, Texas, on
the question of whether to include ID in science textbooks of public schools (PZ Myers,
2007):

William Dembski who is one of the leaders of the Intelligent Design
movement argued that Intelligent Design is science because there’s new
research taking place at Iowa State. That, see, so it’s science, and they’re
doing science at Iowa State, and, well, I knew he was referring to what Dr. Gonzalez was doing. And I realized, well, this is not new research at all . . . it’s not research, this is old creationism, repackaged.

Avalos’s insistence on boundaries of science based on free speech of proponents of evolution may be seen in his simultaneous signaling of Iowa State as a science-based institution (“They’re doing science at Iowa State.”) and his dismissal of Gonzalez’s ID “research” (“It’s not research.”). Avalos’s pejorative reference to Gonzalez’s ID research suggests that he does not consider it as amounting to scientific speech. Hence, for him, it is outside boundaries of science based on free speech.

Research is an important area of university academics’ free speech. Both the 1915 declaration and the 1940 statement mention research as the first among the three parts of academic freedom in higher education. While the 1915 declaration somewhat cryptically defines research as a pursuit requiring a “scholar’s method and the spirit,” the 1940 statement does not specify what counts as acceptable academic research. However, an AAUP statement links academic research to teaching and “professional expertise” (“Freedom in the Classroom”). Avalos’s rejection of Gonzalez’s ID “research” as scientific speech (and hence outside boundaries of science) appears to have been consistent with this AAUP guideline because Gonzalez’s “research” was not linked to either his teaching or his disciplinary expertise in astronomy as recognized by an overwhelming majority of scientists or astronomers.
Thus proponents of evolution from science and non-science departments at Iowa State collectively and implicitly upheld their scientific speech by issuing a statement that rhetorically drew boundaries around science.

Additionally, by explicitly invoking free speech to justify their statement rejecting ID as science, proponents of evolution rhetorically invested their boundary-work with attributes of balance and “fairness” (Taylor & Condit, 1988, p. 297), two rhetorical terms connected with academic freedom that contribute to effective boundary-work on populist fronts by opponents of evolution in public schools (Taylor & Condit, 1988). This gesture on the part of proponents of evolution in the debate at Iowa State contrasts with what proponents of evolution in public schools usually do in their boundary-work based on academic freedom on populist fronts (Taylor & Condit, 1988).

By describing the statement rejecting ID as science as “granting a voice to the other [evolution] side” (Dillon, The Tribune, September 6, 2005), Avalos rhetorically invested the statement with providing balance in the debate by representing the other side of Gonzalez’s argument. Similarly, Avalos stated that he and his supporters were “trying to balance whatever [Gonzalez’s] Web site [his personal Web site not linked to his university Web page] says with an opposing viewpoint.” Invoking balance—a rhetorically cognate term of academic freedom in boundary-work disputes (Berube, 2006; Pennock, 2001)—appeared to make the debate more about proponents of evolution responding to boundary-work by opponents of evolution or proponents of ID (mainly, that ID is scientific) and less about keeping ID out by boundary-work based on scientific imprimatur. Focusing on balance seems to have been a rhetorical strategy on the part of Avalos to disarm critics on populist
fronts by providing a veneer of academic objectivity and making it seem as though both sides had their say in the debate. It was a rhetorical strategy also because Avalos’s own boundary-work—implicit invocation of free speech premised on Iowa State being a science and technology university—made it somewhat paradoxical for him to claim that he and his supporters were merely responding to boundary-work by Gonzalez and his ID supporters.

Avalos invoked fairness by seeming to acknowledge Gonzalez’s right to do his own boundary-work: “And, by the same token, if Dr. Gonzalez says I do think it’s [ID is] science, well, he has a right to say so. We didn’t take away that right.” Similarly, Avalos stated that the position that ID is science and the position that it is not are both possible based on free speech. Avalos’s acknowledgement of Gonzalez’s free speech right to state that ID is “science” also appears to have been a rhetorical gesture. Based on a general sense of free speech, that is, the freedom to speak what one thinks, Avalos stated what was not questionable—that Gonzalez or anyone else has a right to state that ID is science. However, Avalos’s acknowledgement of Gonzalez’s free speech right assumes rhetorical complexity when filtered through the technical sense of academic freedom as free speech as expressed in the 1940 statement and other supporting artifacts.

Free speech in higher education is open even to very disagreeable ideas (“On Freedom of Expression,” 1994; O’Neil, 2008). However, the 1940 statement calls upon faculty members to refrain from introducing in classroom controversial material unrelated to the subject. An interpretation of the statement qualifies this injunction by specifying that its purpose is not to discourage discussion of controversial ideas but to prevent their repeated introduction in classroom (“1940 Statement”; O’Neil, 2008). In addition, courts have
declared academics’ classroom speech to be under institutional control (O’Neil, 2008).

Hence, if Gonzalez had used his free speech to repeatedly discuss ID in his astronomy classes (something he did not do), he may have invited backlash from students, faculty members, or university administrators. Therefore, Gonzalez’s free speech in relation to ID—that is, his boundary-work based on free speech—was constrained by the 1940 statement.

Moreover, even if an argument is made that ID is not entirely unrelated to classes discussing evolution and hence within boundaries of science based on free speech under the 1940 statement, such an argument is not without difficulties. Courts have indicated that free speech may invite restrictions or adverse repercussions if a faculty member uses it to advance controversial, egregious, or discredited viewpoints in one’s own field (Rabban, 1990; O’Neil, 2008). This position of the courts is known as the “fitness” argument, which broadly means that universities may rightfully remove faculty members who demonstrate a lack of “fitness” for their position due to harboring and expressing extreme or fringe beliefs concerning their own disciplines (O’Neil, 2008, p. 6). This criterion may have been applicable to Gonzalez, an astronomy faculty member, had he been teaching ID in his astronomy classes, which he did not. Avalos alluded to this possibility when he stated, “I think in sciences it’s [a belief in ID] probably more problematic. In science the earth is not flat.” Continuing his comparison of a belief in ID to a belief in a flat earth claim, Avalos added that if an academic scientist claimed that the earth was flat, “it [was] going to be very difficult to ignore that person.” Thus, despite Avalos’s rhetorical acknowledgement, the framework of academic freedom in higher education and the interrelated legal implications constrained ID’s boundary-work.
In summary, proponents of evolution at Iowa State invoked academic freedom as free speech implicitly for boundary-work on populist fronts to declare ID unscientific. Additionally, by maintaining an impression of being fair and balanced in their boundary-work by providing a space for the viewpoint of the other side through their public statements, they attempted to take advantage of these rhetorical terms on populist fronts—something opponents of evolution effectively do in public school boundary-work disputes.

In contrast, boundary-work on populist fronts by proponents of evolution in public schools is dominated by rhetorical *topoi* of science (Taylor & Condit, 1988; Taylor, 1996; Pennock, 2001). Additionally, invoking rhetorical terms of balance and fairness appears to be difficult for proponents of evolution in scientific ecosystems of public schools because of strict adherence to the Establishment Clause. In public schools, concerns of the Establishment Clause are particularly strong given young age and lesser maturity of students, who are often intellectually unprepared to understand nuanced discussions involving science and religion (Pennock, 2001). This constraint might make it difficult, if not impossible, for proponents of evolution to acknowledge their opponents’ boundary-work based on free speech without risking violation of the Establishment Clause (Uerling, 2000; “Peloza versus Capistrano”). Despite rhetorically acknowledging their opponents’ boundary-work based on free speech, proponents of evolution at Iowa State also rejected their opponents’ boundary-work.

*Boundary-Work Based on Curricular Freedom by AAUP and Iowa State Administration*

Curricular freedom is a core aspect of academic freedom in higher education. This aspect was at the center of AAUP’s and the Iowa State administration’s boundary-work in
ways that might appear reasonable and fair on populist fronts given values and tenets of higher education.

Curricular freedom was fundamental to the genesis of the concept of academic freedom, as is seen in this assertion from AAUP’s 1915 declaration: “A university is a great and indispensable organ of the higher life of a civilized community, in the work of which . . . the faculties hold an independent place . . . and in relation to purely scientific and educational questions, the primary responsibility.” Curricular freedom is intimately connected with boundary-work disputes because they are fought over what should or should not be included in curricula related to evolution. For proponents of evolution, boundary-work through curricular freedom means exclusive control of science curricula with the mainstream scientific community, a state of affairs representing for them genuine scientific education (Taylor, 1996; Numbers, 2006). Conversely, for opponents of evolution, exclusive authority for curricula involving evolution with the mainstream scientific community amounts to science that is dogmatically restricted (Taylor, 1996).

An important element of boundary-work based on academic freedom on populist fronts by opponents of evolution in public schools has been their ability to influence or co-opt multiple actors: science teachers, students, parents, school administrators, local and district school board officials, state board officials, state legislators, textbook publishers, and so on (Taylor, 1996; “Kansas Evolution”; Pennock, 2001). Part of the reason opponents of evolution are able to co-opt these, multiple actors is that courts have recognized local and state control over public schools, including in curricular matters (Stuller, 1998; Uerling, 2000; “Epperson versus Arkansas”; “Peloza versus Capistrano”). Shared curricular
responsibility in public schools is related, perhaps partly due, to less specialized education (Stuller, 1998). Another argument for local and state control over public schools’ curricula is that since citizens fund public schools, they have a right to expect that schools reflect some of their values (“McLean versus Arkansas”).

A self-serving corollary by opponents of evolution in their boundary-work on populist fronts is that public schools should respect academic freedom of students and parents in curricula involving evolution (“Edwards”; “Kansas Evolution”). Although this boundary-work argument has been rejected on the legal front based on the Establishment Clause (“Kansas Evolution”), it seems to resonate on populist fronts, perhaps because it is difficult to argue with a notion that parents should have a say in their children’s education (“Kansas Evolution”).

Another way in which multiple actors influencing curricula in public schools may be useful to opponents of evolution is that it may not be difficult to find at least some actors who might be sympathetic to their boundary-work. A group of such actors—textbook publishers, parents, school board members (Taylor, 1996)—can force a debate on their claims on the grounds of balance, fairness, or other rhetorically cognate terms of academic freedom. Such debates (or boundary-work episodes) can generate publicity and support for opponents of evolution. If one also considers the factor of the Establishment Clause, which allows proponents of evolution in public schools only token or minimum engagement with their opponents (“Peloza versus Capistrano”; “McLean versus Arkansas”; Witham, 2002), the resulting picture seems to further explain efficacy of boundary-work by opponents of evolution based on academic freedom on populist fronts in public schools.
The mostly token engagement between proponents and opponents of evolution in public schools is often limited to brief, even pejorative, mentions of arguments of opponents of evolution in science textbooks. Occasionally, these arguments are briefly considered in a non-science class, such as history (Witham, 2002). Even such peripheral mentions are fraught with difficulties because of content that may be intellectually, logistically, or legally challenging for students, teachers, and administrators in public schools (Witham, 2002). A combination of these factors—this apparently wholesale “denial” of curricular freedom to opponents of evolution in public schools along with shared curricular responsibility—is perhaps at the center of successful boundary-work based on academic freedom on populist fronts by opponents of evolution in public schools despite repeated legal putdowns.

In contrast, curricular matters in higher education are almost entirely insulated from outside actors. The principal way to ensure this autonomy is curricular freedom for faculty members. An AAUP statement declares that “the faculty has primary responsibility for such fundamental areas as curriculum, subject matter and methods of instruction” (“Statement on Government”). Similarly, an AAUP statement urges “professors . . . to promote conditions of free inquiry” in conjunction with their “responsibilities to their subject, to their students, to their profession, and to their institution” (“Statement on Professional Ethics”). AAUP backed boundary-work based on free speech by proponents of evolution in the debate at Iowa State on grounds of curricular freedom. AAUP congratulated Avalos and co-signers of his statement for defending the university’s curricular, professional, and institutional integrity (“AAUP,” Iowa State Daily, September 26, 2005). Iowa State administration also appeared to have backed boundary-work by proponents of evolution, but not openly or directly.
AAUP wrote individual letters congratulating each of the more than 120 faculty members who had signed Avalos’s statement (“AAUP,” *Iowa State Daily*, September 26, 2005). A copy of the letter was also sent to the campus newspaper (*Iowa State Daily*, September 26, 2005). The letter praised Avalos and the co-signers of his statement for using their free speech against “external interference in a matter of scientific expertise” (*Iowa State Daily*, September 26, 2005). AAUP’s general secretary characterized “external interference” as “political pressure to teach Intelligent Design . . . as an alternative to evolution” (*Iowa State Daily*, September 26, 2005). Thus AAUP’s boundary-work defended the right of faculty members at Iowa State University to determine the university’s science curricula.

AAUP is a useful ally for proponents of evolution in scientific ecosystems of higher education because its guidelines may allow them to do boundary-work based on academic freedom in ways that appear fair, balanced, and according to “rules” of higher education. These attributes seem more positive and convincing on populist fronts than the forbidding Establishment Clause concerns or dry scientific *topoi* dominating boundary-work by proponents of evolution in scientific ecosystems of public schools.

In consonance with AAUP’s guideline stating that curricular decisions are a faculty responsibility (“Statement on Government”), President Geoffroy and the Faculty Senate left curricular decisions regarding ID to individual departments, who could decide whether and how to teach ID in the department by following the routine procedures for course approvals (Dillon, *The Tribune*, September 6, 2005). Although this decision was consistent with the guidelines of AAUP, the decision could also be seen as an important boundary-work strategy on the part of the Iowa State administration because science curricula was left up to science
departments, allowing them to shape or maintain the curricula free from extra-curricular pressures. In fact, this action was consistent with boundary-work based on free speech by proponents of evolution, who believed that scientists should decide what is and is not admissible within boundaries of science.

At the same time, President Geoffroy’s decision also made it clear that Iowa State did not side with either evolution or ID supporters, like any neutral, fair, unbiased institution of higher learning would be expected to do. These attributes are rhetorically invoked with success by opponents of evolution in public schools. Thus curricular freedom allowed proponents of evolution in the debate at Iowa State to defend boundaries of science while maintaining on populist fronts an *ethos* of fairness and reasonableness. Boundary-work based on free speech by proponents of evolution, directly or indirectly supported by AAUP and the Iowa State Administration based on curricular freedom, was contested by boundary-work based on free speech and absence of censorship by opponents of evolution.

*Boundary-Work Based on Free Speech and Absence of Censorship by Opponents of Evolution*

Censorship and free speech are converse terms in law, according to the 1940 statement, and on populist fronts (“Edwards”). Opponents of evolution in public schools have invoked censorship as a rhetorical term as part of their boundary-work based on academic freedom on populist fronts (Taylor & Condit, 1988; Numbers, 2006). They have argued that “censorship” of viewpoints opposed to evolution is inconsistent with and unrepresentative of genuine scientific education (Taylor & Condit, 1988; “Kansas Evolution”). Specifically, they have argued that theistic “alternatives” to evolution should be treated equally with what they
believe are “religions” supporting evolution—atheism and secular humanism ("Edwards"; “Kansas Evolution”). Although this argument has been rejected on the legal front—the courts have refused to consider atheism or secular humanism as religions for the purposes of boundary-work disputes ("Peloza versus Capistrano")—it resonates on populist fronts due to its religious appeal and the framing in terms of one or more of rhetorically cognate terms of academic freedom (Taylor & Condit, 1988; “Kansas Evolution”; Numbers, 2006).

In his boundary-work on populist fronts, Gonzalez and his ID supporters invoked both academic freedom as free speech and its converse term of censorship. Boundary-work based on free speech and absence of censorship by opponents of evolution in the debate at Iowa State appeared to be directed at both populist audiences and university authorities. For example, answering a question as to who were some of the audiences for his Web site, www.privilegedplanet.com—a Web site not linked to his university Web page—Gonzalez stated that the Web site was for “general interested public.” The Web site summarized some of the main claims in Gonzalez’s book and included links to his articles or letters published in popular science magazines or newspapers. At the same time, in his newspaper interviews, Gonzalez appeared to defer to his role as a university professor and seemed more guarded about his ID claims.

Gonzalez appeared to view academic freedom as free speech or curricular freedom as described in the 1940 statement. He defined academic freedom as “professors being permitted to follow their intellectual interests” subject to their not bringing into classroom their “personal pursuits.” Calling ID his “extra-curricular activity,” Gonzalez stated that he would not teach it unless he had the permission of his departmental colleagues to do so.
(Forgrave, *The Des Moines Register*, August 31, 2005). He explained that ID is “a new theory, and it’s controversial, therefore not yet appropriate for the classroom” (Forgrave, *The Des Moines Register*, August 31, 2005). Similarly, Gonzalez stated that “he doesn’t teach Intelligent Design because he doesn’t want to teach about an idea that’s not yet accepted” (*The Des Moines Register*, August 26, 2005). This boundary-work based on free speech (or curricular freedom) was consistent with the injunction in the 1940 statement against bringing unrelated, controversial material into classroom. Thus, with regard to teaching, Gonzalez did not appear to posit ID as science through his boundary-work based on free speech or curricular freedom on populist fronts.

In his boundary-work in relation to teaching, Gonzalez also appeared to be deferring to the university authorities, both because he may have wanted to avoid adverse consequences of the 1940 statement and because he was going to come up for the tenure shortly. Whatever his reasons, Gonzalez’s boundary-work based on free speech in relation to teaching was similar to that by proponents of evolution and the AAUP, both of whom opposed teaching ID in science classes. This aspect of boundary-work by opponents of evolution in the debate at Iowa State speaks to boundary-work’s taking into account of competing positions (Taylor, 1996).

Gonzalez’s boundary-work based on free speech in relation to extramural or public speech seemed to characterize ID as *extra-curricular science*. For example, he did not link the companion Web site to his book, www.privilegedplanet.com, to his Web site given by the university. Giving reasons for keeping them separate, he stated that “it [the companion Web site] permits me to be very open . . . perhaps something that wouldn’t be possible with the
Web site that’s linked through the campus.” By keeping the two Web sites apart, Gonzalez followed the 1940 statement’s caution about extramural speech in not “want[ing] to make it look like there is some kind of university endorsement of the Intelligent Design movement.” Similarly, in a nod to this advice, Gonzalez kept separate “part of [his] professional life [pursuing] Intelligent Design . . . and then . . . other part . . . doing astronomy at university.” He also described ID as his “outside interest.” At the same time, he insisted that ID is “science,” stating that ID’s “methods are scientific” (Forgrave, The Des Moines Register, August 31, 2005), a nod perhaps to his ID supporters and others willing to listen on populist fronts.

Indeed, Gonzalez claimed that by keeping the Web site related to his book and his general ID-related activities interest distinct from his university role as a science professor, he was “limiting his academic freedom.” However, it is unclear from his expression (“limiting . . .”) whether he was referring to his adherence of the 1940 statement’s guidelines or whether he believed that he was going beyond the guidelines and sacrificing his academic freedom.

Gonzalez’s characterizing ID in relation to extramural speech as “extra-curricular science” and in relation to teaching as “not science yet” were parts of his complex boundary-work to appeal to dissimilar audiences. These audiences seemed to have included those on populist fronts, his ID sympathizers, university authorities, and perhaps mainstream scientific community. Through boundary-work based on free speech or curricular freedom as described in the 1940 statement, he placed ID outside curricular or academic science for teaching and public interaction as a university professor, just as university authorities and scientific
community would have liked and expected him to do. Yet, through boundary-work based on free speech in its general sense—that is, freedom to speak one’s mind, Gonzalez placed ID within boundaries of science by insisting that ID is science, something that would likely appeal to his ID supporters and others on populist fronts who may be inclined to hear or be persuaded by ID’s claims. Thus it appears that Gonzalez carefully drew boundaries around science based on free speech in ways that also drew boundaries between his academic career as a university scientist and his involvement with ID activities.

Yet, using the term of censorship, Gonzalez and his ID supporters also drew boundaries around science. Gonzalez seemed to have accepted boundaries of science based on the technical sense of free speech in the 1940 statement for teaching and official public interaction. However, in consonance with the guideline in the 1940 statement regarding unencumbered free speech for research, Gonzalez and his ID supporters invoked the term of censorship to accuse proponents of evolution of blocking “scientific” research of ID (Forgrave, *The Des Moines Register*, August 31, 2005; Gallus, Jr., Verkade, Ingebritsen, Weber, *The Des Moines Register*, September 4, 2005). Gonzalez went to the extent of stating that “rejecting Intelligent Design as a scientific theory poses the greatest threat to academic freedom [for research]” (*Iowa State Daily*, September 26, 2005).

Alluding to his ID research, Gonzalez also mentioned the fact that Iowa State University, in conjunction with the Templeton Foundation, had administered part of the grant that enabled him to write his book supporting ID. Referring to Iowa State’s role in the book, Gonzalez stated, “The university did have something to do with it [the book]. So I see that as allowing some academic freedom on my part that the university had no problem with
administering that grant for writing this book, which they were told about, they knew about.”
In this quote, Gonzalez appears to tie Iowa State’s initial support for his book to the university’s approval of his ID research. He further stated that “they [Iowa State administrators] were already being rather kind of open to my doing this [ID] research.”
However, in a subsequent statement, Gonzalez expressed his doubts if the university would do the same thing in light of the debate. He stated, “I don’t know if that would happen again in this new environment that we have today.”

The invocation of censorship by opponents of evolution in the debate at Iowa State, like that of opponents of evolution in public schools, involved accusing proponents of evolution of a commitment to materialism / atheism. For example, Gonzalez wrote in a newspaper letter, “What I find interesting is that the most vocal opponents of our argument have been atheists.” Another ID supporter wrote, “Mr. Avalos and his followers should not be allowed to censor the free speech of a person who does believe in an Intelligent Designer.” At the same time, Gonzalez also claimed that “it is beyond the scope of Intelligent Design to uniquely identify the designer” (Gonzalez, Iowa State Daily, August 26, 2005). He stated that ID is “not religion” (Forgrave, The Des Moines Register, August 31, 2005). Thus invocation of censorship by opponents of evolution in the debate at Iowa State appeared two-faced, not unlike their counterparts in public schools (Taylor & Condit, 1988). However, boundary-work based on censorship allowed opponents of evolution in the debate at Iowa State to simultaneously invoke free speech protection for research afforded by the 1940 statement and appeal to audiences sympathetic to ID, an invoking of two opposed contexts and audiences.
Gonzalez’s complex boundary-work of ID as an “extra-curricular” activity that cannot be taught as science and as science that should be pursued in academic research depend in part on his distinction between ID teaching and research that tests the spirit of the 1940 statement. Although the 1940 statement allows full freedom in academic research, an AAUP guideline states that “freedom in the classroom is ultimately connected to freedom of research and publication” (“Freedom in the Classroom”). Thus it would be difficult to divorce, as Gonzalez implies, ID teaching from ID research.

On the other hand, Gonzalez’s pointing out of the role the Iowa State administration played in the Templeton grant that allowed him to write the book supporting ID presents a complexity. His admission that he was not sure if the university would again do the same thing adds to the complexity. Indeed, the 1940 statement’s guideline on academic research calls for full freedom, subject only to disclosure of financial gains. Thus, in one sense, it may be argued that Gonzalez’s ID research was consonant with AAUP’s guidelines on academic research in higher education. However, a 2008 AAUP summary explicitly states that efforts to offer ID as an alternative to evolution “run counter to overwhelming scientific consensus regarding evolution and are inconsistent with a proper understanding of the meaning of academic freedom” (“Scholars in Peril”). Additionally, in a 2005 testimony before the Pennsylvania House Select Committee on Academic Freedom, David French, an education activist, pointed out that “a state university can’t advocate for or against religion” (“Statement by David French”). So, religious implications of ID may also have presented problems to Gonzalez’s ID research agenda at Iowa State.
To a lesser extent, Gonzalez’s separation between his curricular role and his “outside interest” of ID for extramural speech also poses challenges, even though rhetorically such a separation allows him to address disparate audiences comprising his ID believers and his colleagues at the university. An AAUP statement advises faculty members to “follow subsidiary interests” in ways that do not compromise their freedom of speech (“Statement on Professional Ethics”). This freedom of speech is understood in terms of their “responsibilities to their subject and profession” (“Statement on Professional Ethics”). Furthermore, an interpretation of the 1940 statement makes it clear that professors’ extramural speech should not “raise grave doubts about” their “fitness for the position” (O’Neil, 2008).

Thus boundary-work based on free speech and censorship by opponents of evolution in the debate at Iowa State was rhetorically complex and allowed them to address their multiple, disparate audiences, including those on populist fronts. The systematic framework of academic freedom in higher education offers us insights into complex boundary-work by opponents of evolution. Additionally, boundary-work based on the term of censorship by opponents of evolution is perhaps better addressed in higher education by designing and offering classes that can address these viewpoints more adequately.

Boundary-work Based on Discussion of Controversial Ideas

Discussion of controversial ideas is an aspect of academic freedom that is essential to higher education. Indeed, An AAUP statement reflects its importance by denouncing its opposite: “an institution of higher learning fails to fulfill its mission if it asserts the power to proscribe ideas” (“On Freedom”). Both sides in the debate at Iowa State invoked this aspect as a basis for boundary-work on populist fronts. While the Iowa State administration and
proponents of evolution employed this aspect to place ID outside boundaries of curricular science, opponents of evolution seemed to invoke this aspect for a competing boundary-work that saw ID as within boundaries of science.

Proponents of evolution in the debate at Iowa State and the Iowa State administration saw ID as a controversial idea that was best addressed within the humanities in an interdisciplinary fashion, perhaps by involving science and religion. Conversely, like their counterparts in public schools, Gonzalez dubbed the debate at Iowa State between evolution and ID as a “controversy,” thereby implying differences of opinion among two “competing scientific viewpoints.” Gonzalez seemed to project a similar implication of the term when he stated that ID is “science” that is not yet ready to be taught because it is “controversial” and “not yet accepted” (Forgrave, *The Des Moines Register*, August 31, 2005). Moreover, Gonzalez categorically stated that ID “should not be taught in a religion or philosophy class” (Forgrave, *The Des Moines Register*, August 31, 2005). Thus, by invoking the term “controversy,” Gonzalez appeared to want to redraw boundaries of science as including ID, at least in respect of ID “research.” Hence, his boundary-work based on the aspect of discussion of controversial ideas was difficult to reconcile with that of the Iowa State Administration and the proponents of evolution. Indeed, Gonzalez refused to join their format for discussing ID within the Faculty Senate (Dillon, *The Tribune*, September 6, 2005). He also did not consent to play a part in a course critiquing ID that was taught at Iowa State in the following semester.

In boundary-work disputes involving public schools, opponents of evolution make a rhetorical use of the term “controversy” (“Kansas Evolution”) on populist fronts. Their use of
the term promotes a notion that evolution is beset with a crisis as a scientific theory, and that scientists have growing doubts about its validity (Krauss, 2009). As evidence for their claim of “controversy” within evolution, opponents of evolution point to what they call an increasing amount of evidence showing inexplicable gaps in evolution (“Kansas Evolution”). This boundary-work dovetails into their argument that in the presence of a controversy within evolution, allowing consideration of its potential “alternatives” is a necessity (“Kansas Evolution”). Put simply, boundary-work based on the term of “controversy” by opponents of evolution implies that science cannot ignore such controversies and still be complete. Thus, for science to be “complete” or “accurate,” consideration of opponents of evolution is necessary.

An argument that there is a controversy within evolution—or boundary-work through this term—may allow its opponents to address the “controversy.” Once it is accepted on populist fronts that there is a controversy within evolution and that creationism or ID can perhaps explain some of it, these viewpoints may receive sanction as “scientific.”

Conversely, proponents of evolution completely reject the notion that there is any controversy regarding basic theory of evolution within the scientific establishment (Miller, 2009). To the contrary, they point out that there is an overwhelming consensus in the scientific community that evolution has occurred and continues to do so (Miller, 2009).

Despite denials by proponents of evolution, the contested term of controversy seems to become rather one-dimensional on populist fronts in scientific ecosystems of public schools. The term is often rhetorically invested in boundary-work disputes in public schools with scientific connotations (Krauss, 2009). That is, in response to claims by opponents of
evolution that evolution is controversial within the scientific community, proponents of evolution often defensively acknowledge this claim and deny that there is any controversy. The end result is that both sides state that there is or there is not a scientific controversy regarding evolution. Of course this interpretation suits opponents of evolution who want these disputes to be precisely about two competing visions of “science,” no matter that one of the two sides is considered unscientific by the majority of scientists.

Moreover, boundary-work through the term of controversy may divert from theological aspects of these disputes that inevitably arise due to theistic nature of evolution’s opponents. This hiding from the view of theological aspects of viewpoints opposing evolution also suits opponents of evolution because they can claim that their dispute is not about promoting religious views. Such a posture may get them a hearing from legislators who may be concerned about the Establishment Clause or citizens who may be concerned about mixing religion and science.

Unlike the meaning of the term “controversy” invoked by opponents of evolution in public schools, the Iowa State administration and proponents of evolution invoked the term in a manner consonant with the phrase “controversial ideas” in the 1940 statement. In their boundary-work based on the aspect of discussion of controversial ideas, the Iowa State administration and proponents of evolution considered ID as a subject of controversy involving science and religion. However, the administration took up the debating of the controversial idea at an institutional level, not at the level of departments whose curricular integrity had been ensured by leaving them free to decide what to do in relation to ID, following established procedures for course approvals.
The phrase “controversial ideas” in the 1940 statement broadly includes ideas that are yet to be accepted (or have been rejected) by a majority of disciplinary experts of a given field. President Geoffroy seemed to emphasize this sense of the phrase in relation to ID in a letter to the university faculty: “It is precisely this kind of activity that should take place at a public university where academic freedom is one of our most deeply held principles. One of the hallmarks of any great university is to encourage vigorous debate and discussion on controversial topics, and Intelligent Design is most certainly one” (Dillon, The Tribune, September 6, 2005).

An additional implication of the ISU president’s use of the term “controversial topics” to describe ID (Dillon, The Tribune, September 6, 2005)—a term that is part of the AAUP’s guideline regarding teaching—appears to be that ID could not be taught as science because it was “controversial,” a view with which Gonzalez agreed.

Subsequent to Avalos’s statement rejecting ID as science and the ISU president’s call to the faculty senate to discuss ID (Strickler, Iowa State Daily, August 25, 2005), the senate decided to “pass the Intelligent Design issue to general faculty” because they could “hold open forums by the department” (“Iowa State,” September 6, 2005). Additionally, in response to an ongoing Honors course supporting ID titled “God and Science” taught by a science professor who supported Gonzalez (Golden, 2005), a new Honors course was offered at Iowa State the following semester that critically evaluated ID’s claims. Titled “The nature of science: ‘Why the overwhelming consensus of science is that intelligent Design is not good science’” (“Spring 2006 Honors”), the course was team-taught by Avalos and two other
faculty members from science departments who were co-signers of Avalos’s statement rejecting ID as science.

Thus, boundary-work by the Iowa State administration and the proponents of evolution appeared to invest the term “controversy” with a different rhetorical meaning than the one with which opponents of evolution in public schools have invested the term on populist fronts. Instead of evolution being projected on the populist fronts as “controversial,” in the debate at Iowa State, the term “controversy” was used to refer to ID. Additionally, through the new course that Avalos co-taught, Iowa State University offered a “venue other than the courts” (Campbell, 2003, p. 28) for discussions involving both sides of ID’s claims. It should be kept in mind that an honors course supporting ID’s claims was already underway at Iowa State at the time of the debate.

In public schools, concerns related to the Establishment Clause discourage proponents of evolution to discuss the term “controversy” as involving an intersection between science and theology (Wexler, 2005). ID/creationism can be taught in non-science classes, but such classes are not a rule because of a limited number of electives and a scarcity of teachers who can teach up to the level of complexity that a course discussing evolution and its theistic opponents will likely involve (Witham, 2002). This inability on the part of proponents of evolution may appear on populist fronts as a situation in which opponents of evolution are completely excluded from public schools’ curricula or are being subjected to a “viewpoint discrimination” (Pennock, 2001).
Conclusion

This article sheds light on the underexplored issue of academic freedom in rhetorical boundary-work studies within an underexplored context of higher education. The rhetorical basis of academic freedom for boundary-work deserves greater attention of scholars of rhetoric because these disputes concern scientific education, including, increasingly, that in higher education (Golden, 2005). Academic freedom has been a persistent factor in boundary-work disputes, and it is important for rhetorical scholars to explore how this concept is used for boundary-work by both sides. Such an exploration in scientific ecosystems of higher education should be particularly interesting for rhetoric scholars because of the more developed and a complex framework of academic freedom in higher education.

In addition, this study highlights Taylor’s (1996) notion of boundary-work as involving both collaborators and competitors, who acknowledge one another’s claims. Avalos’s rhetorical acknowledgement of Gonzalez’s right to claim that ID is science and Gonzalez’s admission that ID was too controversial to be taught are instances of this mutual consideration in boundary-work.

I have pointed out how rhetorical processes in our categorization between science and non-science—boundary-work—based on academic freedom on populist fronts may differ in scientific ecosystems of public schools and higher education. My analysis suggests that differences in academic freedom in scientific ecosystems of public schools and higher education differently enable actors for boundary-work. Additionally, my analysis points out
that these differences are rhetorically appropriated by both sides for different boundary-work on populist fronts.

Unlike less effective boundary-work based on academic freedom on populist fronts by proponents of evolution in public schools, boundary-work by proponents of evolution in the debate at Iowa State both rejected and rhetorically acknowledged their opponents by providing space to their viewpoint in public statements and a course. This boundary-work may be perceived as more fair on populist fronts given values and norms of higher education in comparison to boundary-work by proponents of evolution in public schools, often perceived as single-minded in its pursuit of shunning the opponent at all costs. Indeed, the editor of the campus newspaper at Iowa State remarked that the debate in his newspaper was fairly even but slightly in favor of proponents of evolution (“Campus Headlines,” 2005).

Effective boundary-work based on academic freedom on populist fronts by opponents of evolution in public schools seems to be connected to the Establishment Clause concerns and a less specialized or advanced intellectual, curricular, and logistical context. Conversely, in higher education, a more specialized intellectual and curricular context, coupled with a more developed and complex framework of academic freedom, seems to invite a more complex and perhaps more equal (in terms of rhetorical resources) boundary-work by competing parties.

However, differences in academic freedom in the two types of scientific ecosystems may not by themselves differently enable actors for boundary-work on populist fronts. For example, Ervin (1999) found that academics at her university shared an uneasy, even hostile, relationship with local citizens regarding boundary-work issues. What else might explain
different boundary-work based on academic freedom on populist fronts by actors in the two types of scientific ecosystems?

One explanation seems to be what Taylor & Condit (1988) have called “strategic maneuvering” (p. 307)—or rhetorical appropriation—by actors in different scientific ecosystems. These actors perhaps use available rhetorical contexts and tools to their advantage. After all, rhetorical contexts and tools are not givens that can readily and unconsciously be used by actors to derive benefits. This aspect of boundary-work through academic freedom speaks to importance of rhetorical agents in boundary-work.

In addition, the debate at Iowa State seems to question an easy dichotomy of elite and popular discourses. As boundary-work studies (Taylor & Condit, 1988; Taylor, 1996; Ervin, 1999) have pointed out, elite academic discourses often lie on the other end of popular sentiments. Seldom do the two discursive worlds communicate in any meaningful way. Although my analysis does not directly speak to this issue, it does suggest that there may be ways to address, perhaps bridge, this dichotomy. Despite being representatives of an institution of higher education and that of a viewpoint (evolution) that is generally seen as elite (Taylor & Condit, 1988), proponents of evolution in the debate at Iowa State rhetorically used terms of balance and fairness in their boundary-work based on academic freedom on populist fronts. The Iowa State administration and proponents of evolution also worked through the Faculty Senate to discuss possibilities of teaching ID (even though an Honors course sympathetic to ID’s claims was already being taught). The new Honors course on ID, which was offered in the following semester, was team taught by Avalos and two of his co-signers. The course critiqued ID’s claims but still acknowledged and examined ID’s
claims in order to critique them. On the whole, then, the actions of the Iowa State administration and that of proponents of evolution; which might still be seen on populist fronts as inadequate, unjustified, or biased; may also be seen on populist fronts as effective boundary-work given demands and norms of higher education. Future boundary-work studies might investigate effects and perceptions on populist fronts of boundary-work based on academic freedom.

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STATEMENT ON INTELLIGENT DESIGN
BY IOWA STATE UNIVERSITY FACULTY

We, the undersigned faculty members at Iowa State University, reject all attempts to represent Intelligent Design as a scientific endeavor.

Advocates of Intelligent Design claim that the position of our planet and the complexity of particular life forms and processes are such that they may only be explained by the existence of a creator or designer of the universe. However, such claims are premised on (1) the arbitrary selection of features claimed to be engineered by a designer; (2) unverifiable conclusions about the wishes and desires of that designer; and (3) an abandonment by science of methodological naturalism.

Methodological naturalism, the view that natural phenomena can be explained without reference to supernatural beings or events, is the foundation of the natural sciences. The history of science contains many instances where complex natural phenomena were eventually understood only by adherence to methodological naturalism.

Whether one believes in a creator or not, views regarding a supernatural creator are, by their very nature, claims of religious faith, and so not within the scope or abilities of science. We, therefore, urge all faculty members to uphold the integrity of our university of "science and technology," convey to students and the general public the importance of methodological naturalism in science, and reject efforts to portray Intelligent Design as science.
Appendix B: Methods

This article is part of a research project involving my interviews of Hector Avalos, the religious studies professor who composed the statement rejecting ID as science (see Appendix A), and Guillermo Gonzalez, an assistant professor in the Department of Physics and Astronomy who co-authored the book supporting ID.

I interviewed Avalos about the process of drafting and issuing the statement and its implications for academic freedom. Because there was no counter statement by ID supporters, I interviewed Gonzalez about the companion Web site to his book—www.privilegedplanet.com. I also asked him whether he saw it as an expression of academic freedom. I did not ask him questions about the debate itself to avoid causing him unintended discomfort because the debate, which had recently concluded, was widely seen as a referendum on him. Moreover, he was coming up for tenure and may not have wanted to discuss it. Both Avalos and Gonzalez agreed to let me use their real names. Both interviews were tape recorded and transcribed.

In addition to the interviews, I read two scrapbooks maintained and shared by Avalos that contained clippings of newspaper articles, reports, and letters to editors responding to the debate. These clippings were chronologically arranged and generally represented views expressed by both sides.

My rhetorical analysis is based on a close reading of multiple texts related to disputes between evolution and its opponents, including texts related to Iowa State’s debate mentioned above (Jasinski, 2001). I also reviewed extensively AAUP’s guidelines on academic freedom from the organization’s Web site. Close reading, also known as close
textual analysis, is a method of rhetorical analysis focusing on both individual and multiple texts (Jasinski, 2001). As Jasinski (2001) points out, “controversy pushes the critic outside the individual (and potentially isolated) text and forces the critic to engage intertextual dynamics” (p. 95).

My analysis of boundary-work based on academic freedom in Iowa State’s debate and boundary-work disputes in public schools is based on four aspects of academic freedom in higher education: 1) free speech, 2) curricular freedom, 3) absence of censorship, and 4) discussion of controversial ideas. I arrived at these aspects through my reading of AAUP’s and other literature on academic freedom along with my preliminary analysis of data concerning boundary-work based on academic freedom in Iowa State’s debate. Even though the framework represents higher education, for the sake of a more uniform comparison, I apply the same framework to my analysis of boundary-work based on academic freedom in public schools.
Chapter 5. Conclusion

In this dissertation, I argue for greater attention of scholars of rhetoric to disputed organizational and ontological categories because these categories help us better understand complex organizational work involving issues of agency, power, and knowledge. In support of my argument, I offer the following claims:

1) Organizational categories involving conflict underlie organizational issues of agency, power, and ideology in rhetorical, variable, and sometimes unpredictable ways that previous scholarship in rhetoric has not taken account of. Specifically, I found that legitimated organizational categories (Giddens, 1984) came to lose the power they possessed. This outcome was brought about through kairotic agency (Herndl & Licona, 2007) exercised by an agent dominated by these categories, who took advantage of unintended consequences (Giddens, 1984) of these categories, and through organizational agents and stakeholders deliberating these consequences.

2) The main rhetorical topos in boundary-work disputes has changed between disputes of scientific creationism and disputes of Intelligent Design. This development supports Taylor (1996)’s notion of rhetorically and historically adaptive topoi for boundary-work. The changing topos illustrates how science is an institutional, public, and a political category (Kinsella, 2005; Shapin, 1992, Rouse, 1996).

3) Proponents and opponents of evolution differ in their boundary-work involving academic freedom in “scientific ecosystems” (Taylor, 1996, p. 10) of public schools and higher education. These differences are important given that these disputes are essentially fought over scientific education.
My first claim relates to my first article, on the subject of DHS and FEMA’s categories involving conflict. My second and third claims are based on my second and third articles, respectively, involving Iowa State’s debate between proponents of evolution and proponents of Intelligent Design. Below, I elaborate on each of the three sets of claim in relation to my larger argument about the need for rhetoric scholars to pay more attention to disputed organizational categories and ontological categories. Then, I suggest a few areas involving such categories for further research by rhetoric scholars.

Reviewing Bowker & Star’s (1999) important book Sorting Things Out: Classification and Its Consequences, Carolyn Miller (2002) has stated that categories help scholars of rhetoric explore issues of knowledge, power, and value, which have always been central to rhetoric. As I have shown in my article on DHS and FEMA’s categories involving conflict, organizational categories involving conflict can show us how organizational issues of agency, structure, power, and ideology are interconnected in shifting and even transformative ways. In an article about categories in information science, Wanda Orlikowski (1995) has posited that categories both enable and constrain agents. Referring to Anthony Giddens’s (1984) well-known concept of legitimation or sanctioned discourses of dominant organizational groups, Orlikowski (1995) has further pointed out that some categories enable one set of organizational actors to be disproportionately powerful at the expense of some other agents. I have found, however, that categories that are significantly constraining to some agents can be significantly enabling to them in a different context. The reverse is also true. Categories mostly enabling to some agents can be mostly constraining to them with a change in context. I have termed this reversal “delegitimation,” an alternate term based on
Giddens’s (1984) legitimation. The implication of my analysis is that not only is power available to even dominated agents in organizations (Herndl & Licona, 2007), but that sometimes dominated agents can become dominant agents; by the same token, dominant agents can come to lose their dominance.

I have further shown that delegitimation is linked to unintended / perverse consequences (Giddens, 1984) of legitimated categories. My analysis has shown that delegitimation occurs in two ways. Unintended / perverse consequences are rhetorically exploited by dominated agents in a *kairotic* exercise of their agency (Herndl & Licona, 2007). Delegitimation of legitimated categories may also occur due to “discursive penetration” (Giddens, 1984) —or collective sense-making—of unintended consequences of these categories on the part of multiple organizational agents.

Unintended / perverse consequences of categories involving conflict can enlighten us about organizational agents’ interactions with and responses to larger economic, social, political, and geographic environments in which organizations operate. These interactions and responses may in turn tell us about organizational processes of learning and change (Fairhurst, Cooren, & Cahill, 2002; Bryant & Jary, 2001). Finally, understanding these categories better, along with rhetorical issues and consequences involving them, may help suggest ways to mitigate conflict surrounding them (Fairhurst, Cooren, & Cahill, 2002). Although my article does not explore this aspect, mitigation of conflict surrounding these categories is contingent on adequately exploring these categories along with their related organizational issues.
In summary, organizational categories involving conflict can allow us to understand
delegitimation of legitimated categories through agents’ *kairotic* activity and the categories’
unintended consequences.

Ontological categories of science and nonscience in boundary-work disputes have
been widely studied by scholars of rhetoric, sociology, and history of science, among others
posited that historically and contextually variable rhetorical processes underlie these
categories. However, most of the rhetorical studies of ontological categories of science and
nonscience in boundary-work disputes have looked at the disputes in the 1980s involving
evolution and scientific creationism. In recent years, Intelligent Design has emerged as a
major challenger to evolution. My two articles take a fresh look at the ontological categories
of science and nonscience in boundary-work disputes by exploring a dispute between
evolution and Intelligent Design at Iowa State University. I do so to explore changes in
rhetorical processes underlying ontological categories of science and nonscience in
boundary-work disputes. Rhetorical processes underlying ontological categories of science
and nonscience in boundary-work disputes remain important due to continuing—some might
say, increasing— influence of these disputes on academic institutions and their stakeholders
(“Darwinian Struggle”). In my two articles based on Iowa State’s 2005 debate between
proponents of evolution and proponents of Intelligent Design, I have explored a changing
rhetorical *topos* for boundary-work, and a relatively underexplored basis for boundary-
work—both within the relatively underexplored setting of higher education.
I have pointed out that the main rhetorical *topos* for boundary-work in boundary-work disputes appears to have changed from Popper’s falsification theory to methodological naturalism over the last three decades. This change has partly been a response to the change in the nature of contestants—from evolution versus scientific creationism to evolution versus ID—but in part it appears to have been based on historical and rhetorical interactions involving categorizing contestants since the early 1980s. Taylor (1996) has explored changing rhetorical *topoi* between the disputes of Biblical creationism and those of scientific creationism. I have extended Taylor’s (1996) analysis of changing rhetorical *topoi* to the next set of contestants—evolution versus ID.

Methodological naturalism allows proponents of evolution to draw more sweeping rhetorical boundaries around science. The changing rhetorical *topos* illustrates how science is an institutional, public, and a political category (Kinsella, 2005; Shapin, 1992; Rouse, 1996). As Taylor (1996) has pointed out, rhetorical *topoi* for boundary-work are appropriated by both sides in these disputes. It is in rhetorical exchange between the competing contestants that methodological naturalism appears to have emerged as a preeminent *topos* for boundary-work in the last three decades, to build and project public and/or political front of science in these disputes.

The changing *topos* also suggests how the category of science is seldom settled (Rouse, 1996) but remains distinctive and stable for practical and rhetorical purposes of academic and scientific organizations (Shapin, 1994; Kinsella, 2005). Presenting science as a rhetorical category, as one of several connected with knowledge and not antagonistic to other ways of knowing, may make it appear less dogmatic to laypersons and other publics whose
support is vital to science. Methodological naturalism may be a useful topos in this regard, both to do a clear boundary-work and to implicitly defer to other ways of knowledge, such as religion, philosophy, literature, social studies, and so forth. Academic and scientific organizations or scholars may point out, for instance, that science is a necessary category for practical pursuits to advance human knowledge based on ground rules—such as methodological naturalism—to protect the integrity of the pursuit (Rennie, 2002). They may also point out that knowledge can be pursued in areas that are not bound by methodological naturalism (Condit, 2003).

In the second article based on Iowa State’s debate, I have argued that academic freedom differently enables proponents and opponents of evolution in boundary-work on populist fronts in scientific ecosystems (Taylor, 1996) of higher education and those of public schools. My analysis of Iowa State’s debate, along with that of boundary-work in public schools, showed that proponents and opponents of evolution rhetorically appropriated differences in academic freedom in the two broad types of scientific ecosystems in their boundary-work on populist fronts—involving mainly nonscientifically-trained audiences, including those among politicians, members of school boards, common citizens, and so on.

Academic freedom is a relatively unexplored basis in boundary-work studies (Pennock, 2001), although it has been an endemic factor in these disputes. Moreover, previous boundary-work studies have largely concerned themselves with the setting of public schools—a site where a vast majority of these disputes have taken place (Pennock, 2001). I have explored in this and the earlier article a setting of higher education for a boundary-work dispute. Both of these aspects—academic freedom as a boundary-work basis and higher
education as a boundary-work setting—fill important niches in rhetorical studies of boundary-work.

My analysis raises a possibility of popular audiences perceiving the rhetorical category of science differently in the two types of scientific ecosystems—or academic organizations—on the basis of academic freedom. This possibility may take two forms. We may speak of a rhetorical category of science that is perceived by populist audiences in either of the two types of scientific ecosystems as less (or more) respectful of other modes or categories of knowledge, such as religion. As pointed out in previous boundary-work studies, science has often been seen by popular audiences as an elitist category that is disrespectful and dismissive of other “modes of rationality” (Taylor, 1996, p. 173; Ervin, 1999). Future rhetorical studies of boundary-work involving academic freedom might ask: In what ways do the two types of scientific ecosystems enable categorization of science vis-à-vis religion as a mode of knowledge?

Another form that differential rhetorical categorization of science involving academic freedom—that is, how science is presented as a category to populist audiences based on academic freedom in the two broad scientific ecosystems—might involve ethos associated on populist fronts with the two types of scientific ecosystems or academic organizations. Since higher education is generally seen as a more prestigious level of education, rhetorical category of science in higher education may be seen as more credible by popular audiences. If a future study finds support for this notion, we may view the two types of scientific ecosystems differently for rhetorical work related to categorization of science, expanding our understanding of boundary-work. Is it possible, for example, that popular audiences may be
more understanding of and sympathetic to boundary-work by proponents of evolution in academic organizations of higher education? If a research study finds a case supporting this hypothesis, what explanatory reasons might account for such a finding? It is also conceivable that proponents and opponents of evolution may find avenues for better mutual understanding in their disputes in scientific ecosystems of higher education. As my article points out, at Iowa State, two different courses involving Intelligent Design were offered under the framework of humanities. One of these courses supported Intelligent Design, although the course was taught under the Honors College, not as a science course.

In summary, ontological categories of science and nonscience in boundary-work disputes can enlighten us about changing rhetorical topoi for boundary-work and boundary-work involving academic freedom in scientific ecosystems of public schools and higher education.

Further Research

In this section, I briefly sketch a few potential topics or areas that future rhetorical studies exploring disputed organizational categories and ontological categories may consider taking up. Studies seeking to explore disputed organizational categories may gain from looking at instances of conflicts or disasters involving organizations.

Many rhetorical studies have looked at disasters such as the 1986 Space Shuttle Challenger disaster or the 1979 Three Mile Island accident (Mathes, 1986; Arnold & Malley, 1988; Winsor, 1988; Pace, 1988; Winsor, 1990; Herndl, Fennell, & Miller, 1991; Gross & Walzer, 1997; Farrell & Goodnight, 1998). These studies have analyzed communication
problems and organizational issues of agency, power, and knowledge surrounding the disasters. Although none of these studies have explored categories involving conflict, Herndl, Fennell, & Miller (1991) have analyzed conflict between members of different organizational groups in the Three Mile Island disaster. The conflict related to the members’ different professional backgrounds and social positions within the organization. However, Herndl, Fennell, & Miller (1991) have concluded that the conflict does not seem to have played a significant role in contributing to the disaster. They interpreted the conflict as largely a reflection of differential group identities. Although Herndl, Fennell, & Miller (1991) have not used the term categories to refer to these organizational groups, they seem to have functional, divisional, or departmental categories in mind. Other rhetorical studies may take up similar analyses of organizational categories involving conflict. For example, Michael Cusumano, a professor of Management at MIT, has stated in a recent article that Toyota’s recent safety problems could be analyzed in terms of conflicts involving the organization’s functional categories: “the production system,” “the product development system,” and “general management” (2011, p. 34).

Future studies may confirm and further explore changing rhetorical *topoi* in boundary-work disputes. My article is based on secondary sources and interviews with the leading actors in Iowa State’s debate. Future studies might interview a wider range of actors and stakeholders involved in these disputes: scientists, members of scientific and academic organizations, scholars of science, creationists, Intelligent Design proponents, and so on. Doing so might give researchers a more in-depth and well-rounded view of changing (or stable) rhetorical *topoi* for these disputes.
Future boundary-work studies might also further explore academic freedom as a basis for boundary-work. They might explore boundary-work on this basis by proponents and opponents of evolution in one or both kinds of scientific ecosystems or academic organizations. Specifically, studies might look at whether boundary-work involving academic freedom in one or the other type of scientific ecosystem allows a rhetorical advantage to one or the other side in these disputes. For instance, a study might explore whether a scientific ecosystem of higher education is more conducive to boundary-work by proponents of evolution in comparison to the other side. Such studies might tell us more about how boundary-work might differ in the two kinds of scientific ecosystems or academic organizations—higher education and public schools. Indeed, the current boundary-work literature does not much distinguish between the two types of scientific ecosystems. Comparative studies exploring boundary-work in the two types of scientific ecosystems—such as my second article on Iowa State’s debate—might add to our knowledge about boundary-work disputes.

Other studies might look at the categories of science and non-science in settings or organizations other than those involved in disputes between evolution and its opponents. Recently, the American Anthropological Association decided to drop the term science from its mission document (Wade, The New York Times, December 9, 2010). This decision came after a long-standing struggle involving scholars in the discipline about whether to call their discipline science (Wade, The New York Times, December 9, 2010). Another recent controversy involving the category of science relates to a scientific journal’s decision to publish an article on Extra Sensory Perception or ESP, considered a pseudoscience (Carey,
The journal, called *Journal of Personality and Social Psychology*, is published by the American Psychological Association and decided to accept an article written by a psychology professor on ESP (Carey, *The New York Times*, January 5, 2011). Despite widespread criticism regarding its decision to publish the article, the journal defended itself by claiming that the article had “met the journal’s editorial standards” (Carey, *The New York Times*, January 5, 2011).

Studies engaging such controversies may explore how ontological categories of science and nonscience are negotiated in different disciplines, such as anthropology or psychiatry. Studies might also look at these ontological categories across types of publications: popular, scholarly, electronic, and so on. These studies might examine rhetorical bases or *topoi* underlying these categories in different disciplines or publication venues. Such studies might add to our knowledge about boundary-work by widening the application of this theoretical concept to disputes other than between evolution and its opponents.

Studies may also explore other disputed ontological categories such as person versus nonperson in abortion debates (www.californiaprofile.org), marriage versus civil unions in gay rights debates (Wardle, Strasser, Duncan, & Coolidge, 2003), and the like. Some of the questions such studies might take up may be what rhetorical *topoi* are involved in contestation around these categories. Who are stakeholders in these disputes and what are some consequences of the disputes? Studies might also look at different sites where such disputes play out and how rhetorical contestation between these categories might or might not differ according to one or the other setting.
In conclusion, rhetoric and professional communication scholars should pursue disputed organizational and ontological categories for a richer understanding of rhetorical work in organizations. Disputed organizational categories show us how power in organizations is not a perennial preserve of dominant agents, and conversely, how constrained agents may be able to gain an upper hand by turning unintended consequences of categories to their advantage. Disputed ontological categories show us how knowledge is shaped rhetorically for rhetorical and political purposes in organizations. As lenses that provide us with a more complex and well-rounded understanding of organizational work and issues, these categories merit our wider exploration.

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